Network IP Camera

User's Guide R1.2

NETWORK IP CAMERA User's Guide

FCC Compliance Statement

Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environmental. This equipment generates, uses,, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at own expense.

Warning

This is a class "A" product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Network IP Camera User's Guide
Revision 1.2
Dated: SEP 2002

This Manual is for Intellinet Network IP Camera firmware version firm0030-161. If your camera have the later version of firmware, please download the last updated user's guide form Intellinet's homepage (www.intellinet-network.com)

Important Notice

1. Camera surveillance laws may differ for each country. Therefore, please contact the local region first to avoid any surveillance law violations and to apply for authorized purposes only.

2. Network IP Camera is for indoor use. Therefore note that the CMOS lens assembled to the product can be damaged permanently if the camera lens is exposed to direct sunlight. When you place Network IP Camera under the glaring light, we recommend using an iris lens. If your application demands prolonged exposure to sunlight, you should consider to equip with a sun visor.

3. Network IP Camera is not weatherproof. Therefore you should be well aware of environmental specifications that are included in the manual. In case of outdoor use, where it needs additional weather criteria, you should equip weatherproof case to protect Network IP Camera from water, moisture, or temperature (higher or lower than specification). For Network IP Camera cleaning, gently wipe with clean dry cloth.

4. Be sure to use a DC adapter that is provided by your dealer. Connecting Network IP Camera directly to an AC current may cause electric damages to Network IP Camera.

5. Be caution in handling Network IP Camera for physical shocks may occur serious damage.

6. Be sure to attach Network IP Camera tight and stable to avoid any human injures when you install Network IP Camera. Be cautious to locate on safety places where children are unreachable.

7. If Network IP Camera does not operate properly, please contact the closest local Network IP Camera distributor for after sales service. In all cases, you are prohibited to disassemble the product. If so, intellinet is not responsible for malfunction nor service warranty.

NETWORK IP CAMERA User's Guide

TABLE OF CONTENTS

NETWORK IP CAMERA User's Guide

1 Production Overview

1.1 About Network IP Camera

Network IP Camera is the digital web server camera. This innovative camera combines a digital camera and a network savvy computer to put live digital images on-line and make remote locations immediately accessible through standard web browsers.

Network IP Camera is all-in-one equipped cutting-edge technology product, which contains digital color camera, web-server functionality, optimized hardware for image compression, and physical Ethernet connection. Therefore it does not need any extra S/W or H/W. Simply provide power and connect Ethernet Cable.

Network IP Camera has wide range of applications to monitor places and objects. The most common applications are construction area, important equipment, banks, hospital, amusement park, traffic jammed highway, and baby care center. Therefore, you can conveniently monitor any place through web browsers from the remote sites.

1.2 Main Features and Benefits

Convenient Operation

Network IP Camera does NOT need the extra S/W such as a PC frame grabber nor interact with any other server. The only software needed is Microsoft Internet Explorer 4.x or above and Netscape Network IP Camera 4.x, which has web browser. The only step has to take is to assign a valid IP address.

Open Standard Environment

Supporting TCP/IP networking, SMTP e-mail, HTTP and other Internet-related protocols; Network IP Camera can be used in mixed operating system environment, such as, Windows, Unix, Mac and OS/2. It integrates easily into other www/Intranet applications and CGI scripts.

Simple Administration

Using a standard Web browser, you can configure and manage Network IP Camera directly from its own Web pages. And also, when a new firmware release becomes available, you can simply upgrade all of your Network IP Camera products remotely over the network.

Various External Device Connection Supports

Supporting an auxiliary Input / Output Connector, you can connect your Network IP Camera to a variety of external devices; such as, IR-sensors, switches, alarm relays. In combination with the programmable alarming facilities, you can quickly develop various security applications that are triggered on time or alarm-based events.

Security

Network IP Camera includes a self-contained Web Server, which means that digital images can be secured like any other Internet host. Data protection is normally implemented by your Network Administrator using the unit's security settings in combination with an organization's Internet firewall. The Administrator can decide whether individuals, groups, the whole company or the whole world may access your camera. Network IP Camera supports multi-user password protection

Compression and Performance

With an adaptive frame rate dependent on the prevailing lighting conditions, Network IP Camera delivers JPEG images at up to 30 images per second,

Complimentary Software

- IP installer – for quick installation of multiple units
- Multi-Viewer (for 4 camera View)
- Active X control (required for Microsoft Internet Explorer)
- Java Applet for use with Internet Explorer when Active X cannot be used.

2 Physical Description

2.1 Contents

Check all items packed inside the box as below.

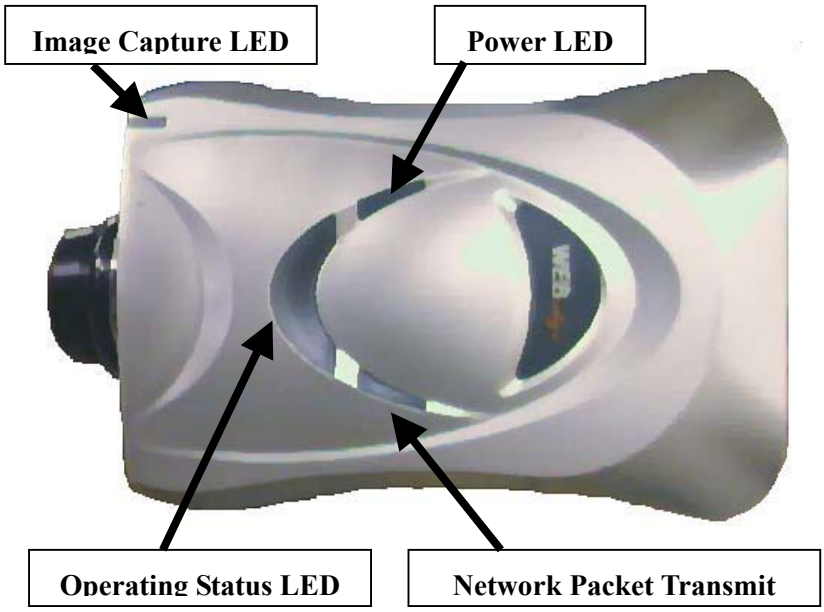
ITEM	DESCRIPTION	REMARKS
Network IP Camera	Network Camera	
AC Adapter & Power Cable	Input: Free voltage Output: DC 12V, 1A	Black Cable
RS232 Cable	D-Sub 9pin	Black Cable
GPIO Connector	GPIO Terminal Block	Assembled
Lens	6mm, F1.8 C mount	Assembled
User's Guide	Network IP Camera User's Guide	Printed Material
Program CD	IP installer, Manual	CD
Bracket	Wall & Table attached Bracket	Iron Material

*** You can use a general camera stand or tripod for Network IP Camera.**

2.2 Top View and Description

Image Capture LED (Red): This LED indicates the status of image capture. Image Capture LED flashes while users are seeing the images from Network IP Camera's homepages. When it flashes once, it means that the one captured image sent to the user.

Power LED (Red): This LED indicates the status of power on. After the power is supplied to Network IP Camera, this Red LED is on.



Operating Status LED (Green): This LED indicates Network IP Camera's Operating status. After power is supplied, it is on for the first 15-20 seconds, and then it blinks once at every one second as long as the power is connected properly.

Network Packet Transmit LED (Green): This LED indicates the status of networking. After the Ethernet cable is connected, it is on.

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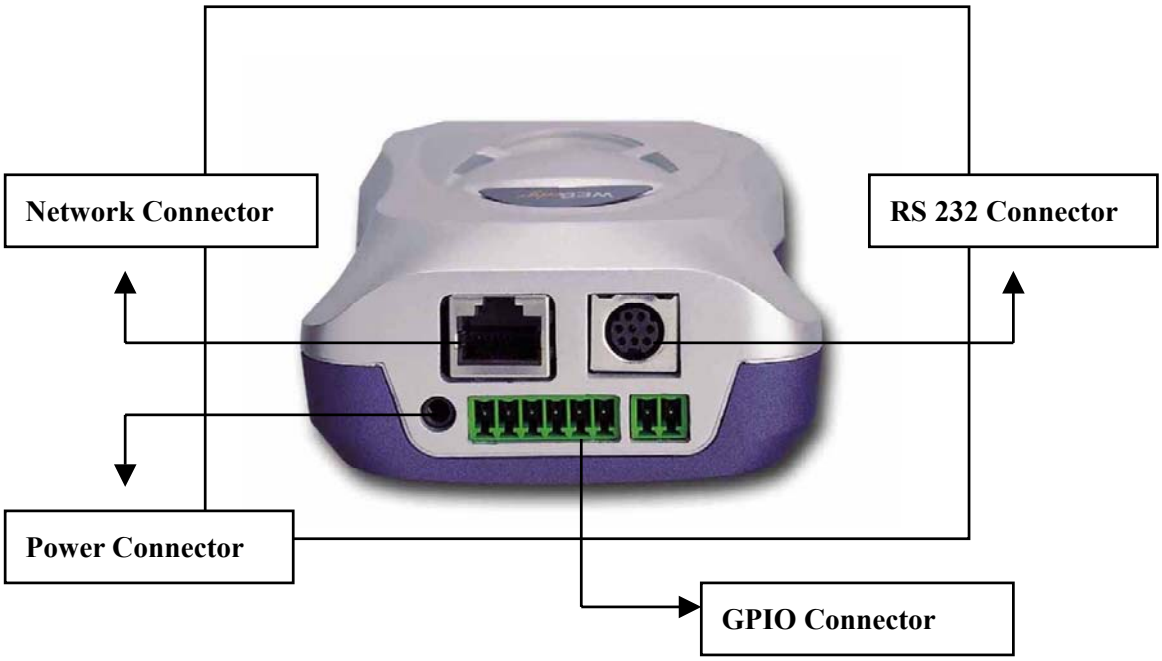
2.3 Rear View and Description



Power Connector: To supply power to Network IP Camera. Use it with AC Adapter together.
You are highly recommended to use AC Adapter provided by your dealer to avoid any possible damage from electric shock.

Network Connector: To connect 10baseT Ethernet or 100Fast Ethernet cable.

GPIO Connector: To connect external devices such as infrared Sensor or Alarm Sensor etc. use with provided terminal block. Refer to chapter "**Appendix F. I/O Connector** "

RS232 Cable Connector: To connect external devices such as external camera, pan/tilt/zoom mechanism, etc**.** Refer to Chapter "**Appendix G. RS 232 Cable**"

3 Installation summary, Connecting & Placing

3.1 Installation Summary

- Connect Ethernet and Power to Network IP Camera on local network for configurations
- Install a Installation program "IP-Installer" for Network IP Camera in to a PC on local network
- Assign an IP address to Network IP Camera and configure administrator's conditions
- Place Network IP Camera for your purpose, and re-connect power and Ethernet
- Adjust the Focus

3.2 Connecting & Placing

- Connect Ethernet line to the Ethernet port in the rear of Network IP Camera
- Connect the power supply to a power supply port in the rear of Network IP Camera.
- Confirm that the power LED, Operating Status Indictor blinks.
- Place Network IP Camera appropriately for you purpose

WARNING

Network IP Camera is for indoor use. The built in CMOS (Complementary Metal Oxide Semiconductor) can be damaged permanently if the camera lens is exposed to direct sunlight. When Network IP Camera is placed under glaring light, and iris lens is recommended.

If your application demands prolonged exposure to sunlight, consider using a sun visor.

4 Assigning IP Address & Accessing Network IP Camera's Homepage

4.1 Assigning IP Address

To able to access Network IP Camera, you should assign an appropriate IP Address firstly.

Important

- Must use the newly assigned IP address, do NOT use occupied IP address, and not use the default or example IP address .
- It is highly recommended to assign IP address before you place Network IP Camera on remote place or remote network. Otherwise, some errors may occur while assigning IP address

Terminology

- **IP Address**:

IP address is an identification code for computers and devices on a TCP/IP network. Networks Using TCP/IP protocol route messages based on the IP address of the destinations. Within a closed network. IP addresses can be assigned at random as long as each one is unique. However, connecting a private network to the Internet requires using registered IP address to avoid duplicates.

IP address can be acquired from a network administrator or an Internet service provider.

- **MAC** (Ethernet) **Address (Media Access Control Address)**

  MAC address is a hardware identification code that uniquely identifies each node of a network. The MAC layer interfaces directly with the network media. Consequently, each type of network media requires a different MAC layer. The MAC address of Network IP Camera is a 12-digit number. A unique MAC address can be found on the label at the bottom of each Network IP Camera

- **Direct (Non Crossover) UTP Cable**:

  A common UTP cable (Twisted Pair Category 5 Cable) to connect devices such as a PC or Network IP Camera that has an Ethernet port (RJ-45 port). The direct cable should be used if a HUB is used as an intermediary between the Network IP Camera and PC

- **Crossover UTP Cable**

  A specially designed UTP cable to connect two devices directly like connecting a PC and Camera through Ethernet port. A HUB is not necessary to connect Network IP Camera to a PC if a crossover cable is used.

-NOTE-

IP addresses with any connection

If the camera system is connected to the Internet, IP addressing is a potential problem. There are two types of IP address, static and dynamic. Internet access through an ISP (Internet Service Provider) usually means a dynamic IP address, and a static IP address is much more desirable for a camera system. With a static IP address the camera system can be located and viewed by any browser by typing the IP address as the location to open. But dynamic IP addresses chance, so the users will have difficulty finding the camera. When connecting to a company network, a dynamic address can be avoided easily. When connecting via an ISP, static IP addresses carry additional charges, if they are available at all. Alternative schemes to 'redirect' user to the camera each time the IP address changes are possible, so this area is likely to become easier in the future.

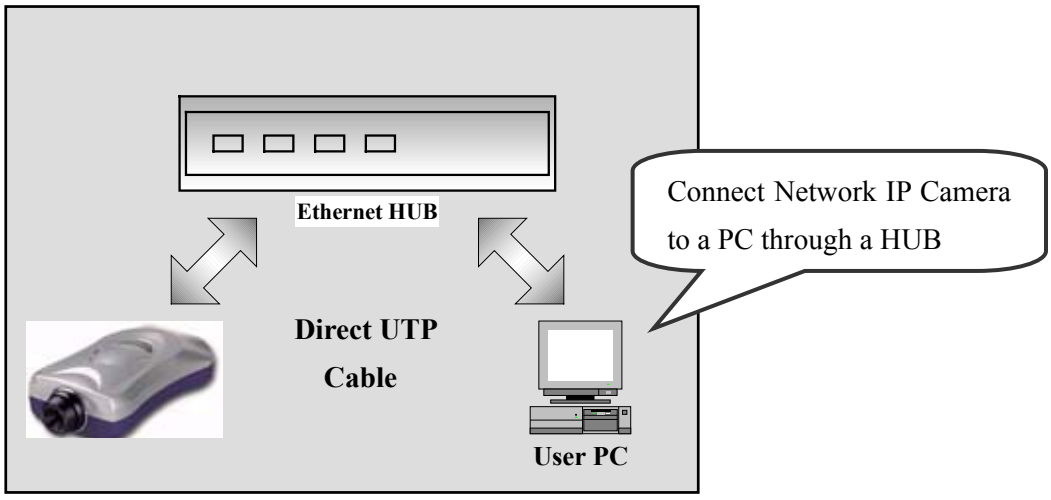
4.2 Assigning IP address by using IP installer.

4.2.1 Connecting Network IP Camera to PC

At first, you need to install an IP installation program (IP Installer.exe) on your PC that is connected on the same local network as Network IP Camera.

1) Connecting with direct cable (Non Crossover UTP cable)

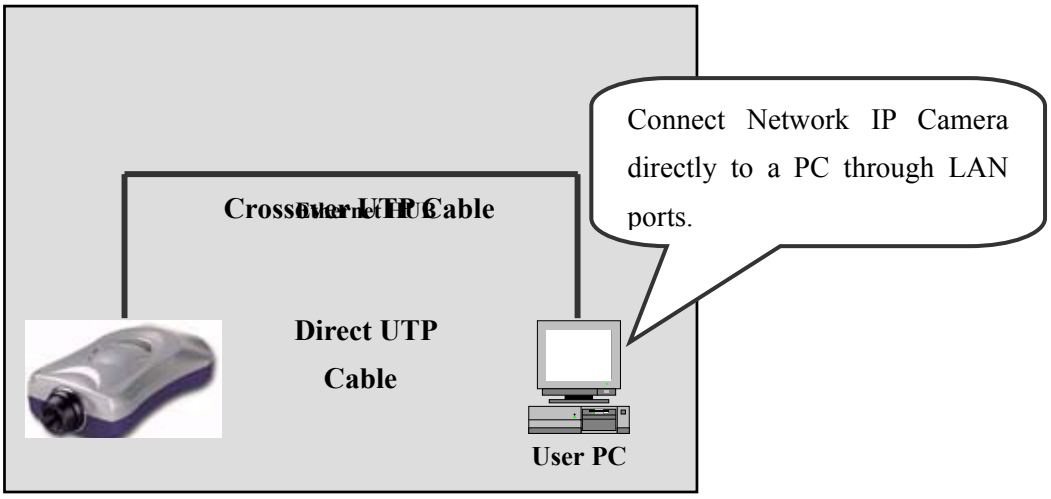
In this case, you have to use a HUB to connect Network IP Camera and a PC to assign IP address or you should have an Ethernet Cable to connect the Network IP Camera, and a PC that is already connected with Ethernet Cable.



2) Connecting with Crossover UTP Cable

Use the crossover to directly connect Network IP Camera to a PC. This connection is to be used to configure Network IP Camera.

***It is highly recommended that you assign IP address to Network IP Camera with crossover cable.**



4.2.2 IP Installer

To install an IP address, you should use the IP Installer provided with Network IP Camera. You can download its program through the web site (http://intellinet-network.com)

Note: System required for IP installer; Microsoft Windows9X/NT/2000

4.2.3 Staring a IP Installer

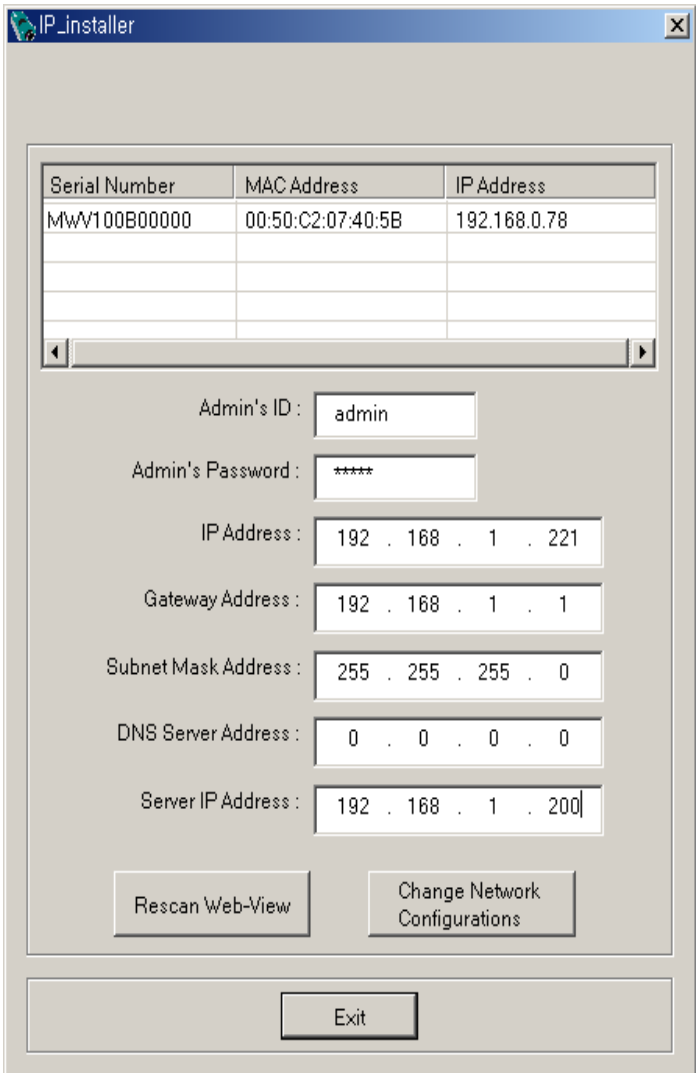
Firstly, install an IP-Installer program on your PC that is connected on the same local network as Network IP Camera. And click it. You can only setup a Network IP Camera that is connected on a local network.

① Execute IP Installer after Network IP Camera completes its booting (Wait until the operating LED blinks every in a second periodically).

② When the IP-installer is executed, the panel shows every Network IP Camera connected at the local network.

From the Network IP Camera listed, select one to assign a new IP address (Every Network IP Camera has factory default IP address).
Note the MAC Address found on the underside label of Network IP Camera.
To choose a Network IP Camera, click on its list.

③ Enter the Admin's ID and Password in the blank (Default Admin's ID and Password are all "**admin**") to assign (or change) IP Address for Network IP Camera and set up.



④ Enter the IP address, Gateway address, Subnet Mask address, DNS Server address and Server IP address that is assigned from network administrator in blank of "New IP address", Gateway Address and others. (When the addresses are not assigned properly, you cannot access Network IP Camera remotely. Even on the local network, you are not able to access if you do not assign an IP address to Network IP Camera properly).

⑤ Server IP Address represents an IP address of PC, which is being executed upgrade program when you have Network IP Camera upgraded. (Please refer to Chapter '**E Updating Network IP Camera's newly upgraded Program**).
After entering all addresses for Network IP Camera, click on "Change Network Configurations" button.

⑥ The Success message shows up if all the information is set up properly. Then click "OK"button.

NOTE

After changing Network Configuration for Network IP Camera, It will take a little time to reboot Network IP Camera by itself so that you may access Network IP Camera's Homepage after checking the Operator LED blinks.

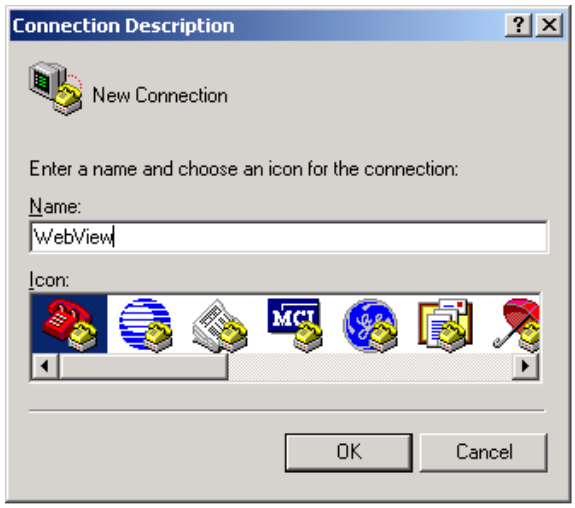
4.3 Assigning IP Address by using Hyper Terminal

In case you do NOT assign IP address by using IP Installer, you can assign IP address by using Hyper Terminal. In this case, you should configure Hyper Terminal condition first.

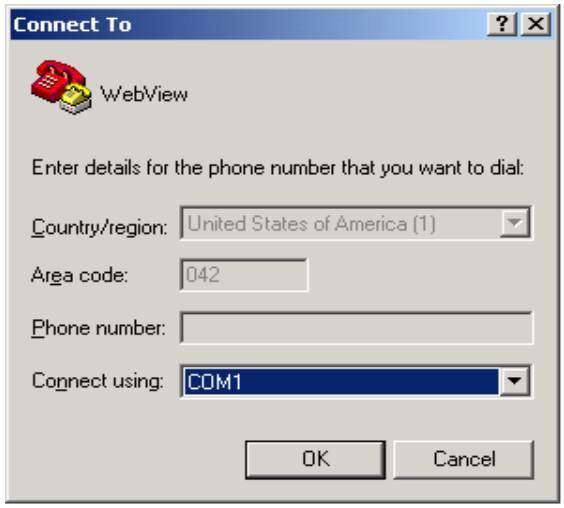
4.3.1 Configuring Hyper Terminal

Hyper Terminal is a basic program for Windows 9x/NT/2000. PC can communicate with external devices through the serial port by using this program. The steps you should take to set the Hyper Terminal are as follows in the case of Windows 2000 OS.

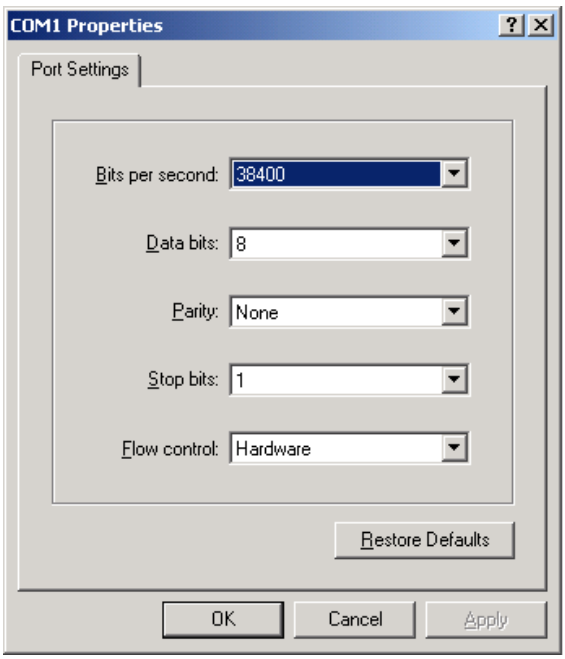
① Start → Programs → Accessories → Communications → Hyper Terminal. Select one among the icons and then enter an appropriate name in the Name edit box.



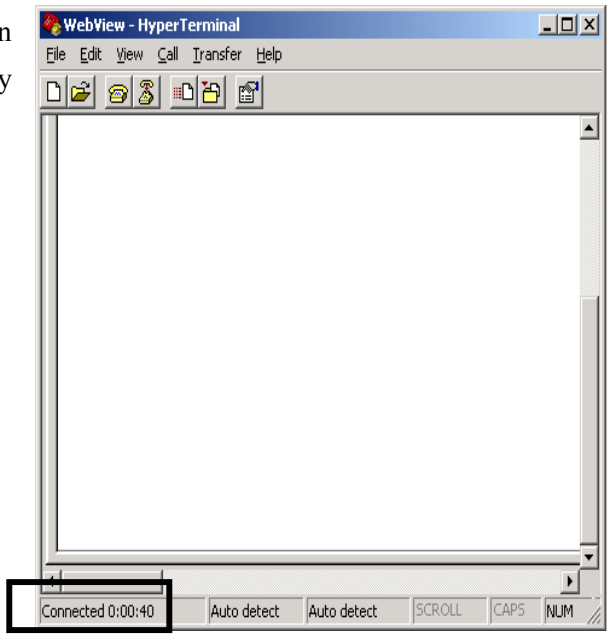
② Select a serial port of PC, then click "OK" button. (Usually COM1 or COM2 is recommended)



③ Configure bit/sec as 38400 and leave others as default values.



④ The panel shows up like on the right side when you configure properly. (If it doesn't, please try again from beginning)



4.3.2 Assigning IP Address

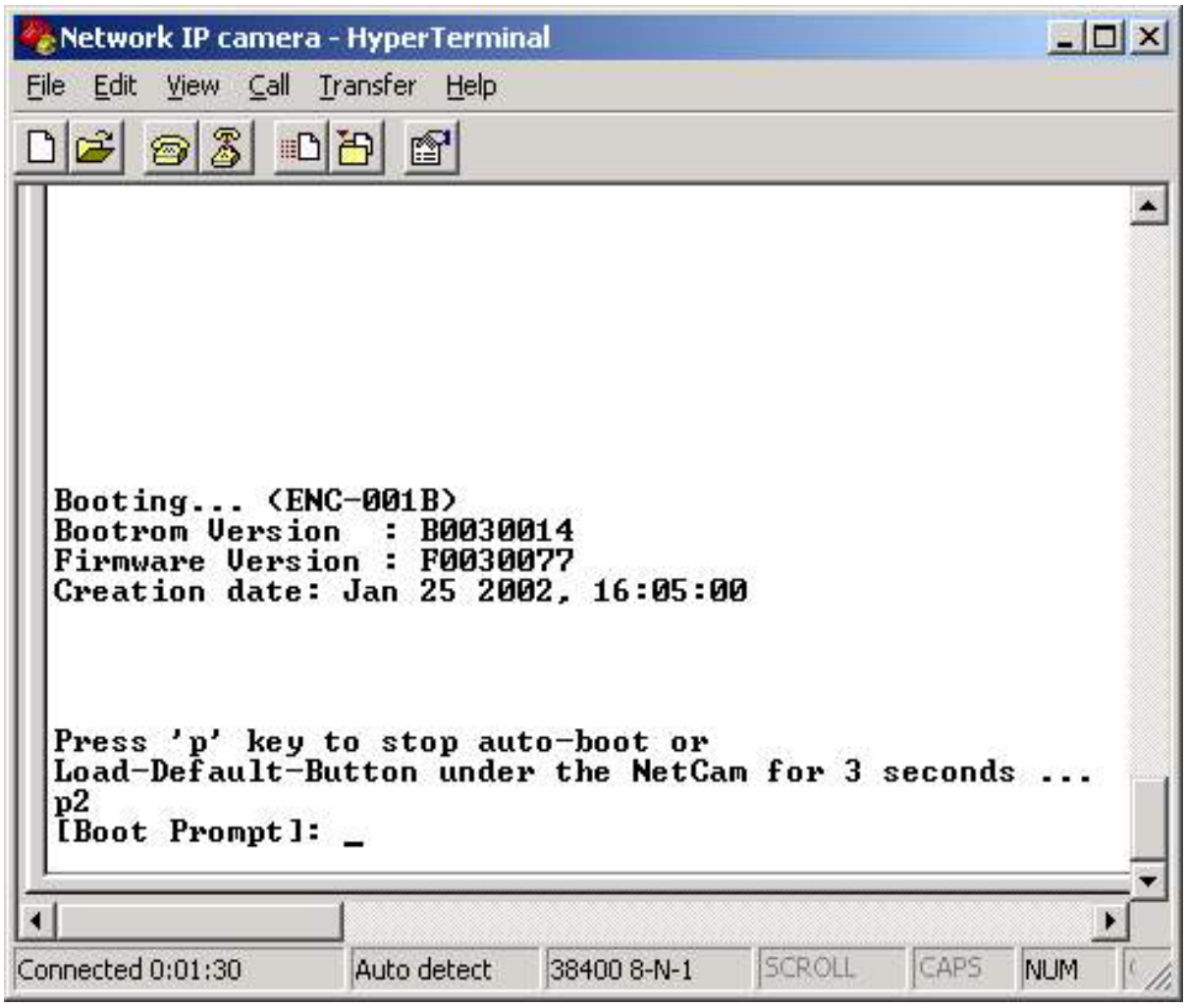
Follow the below steps to assign IP address by using Hyper Terminal

① Execute "Hyper Terminal" on your PC

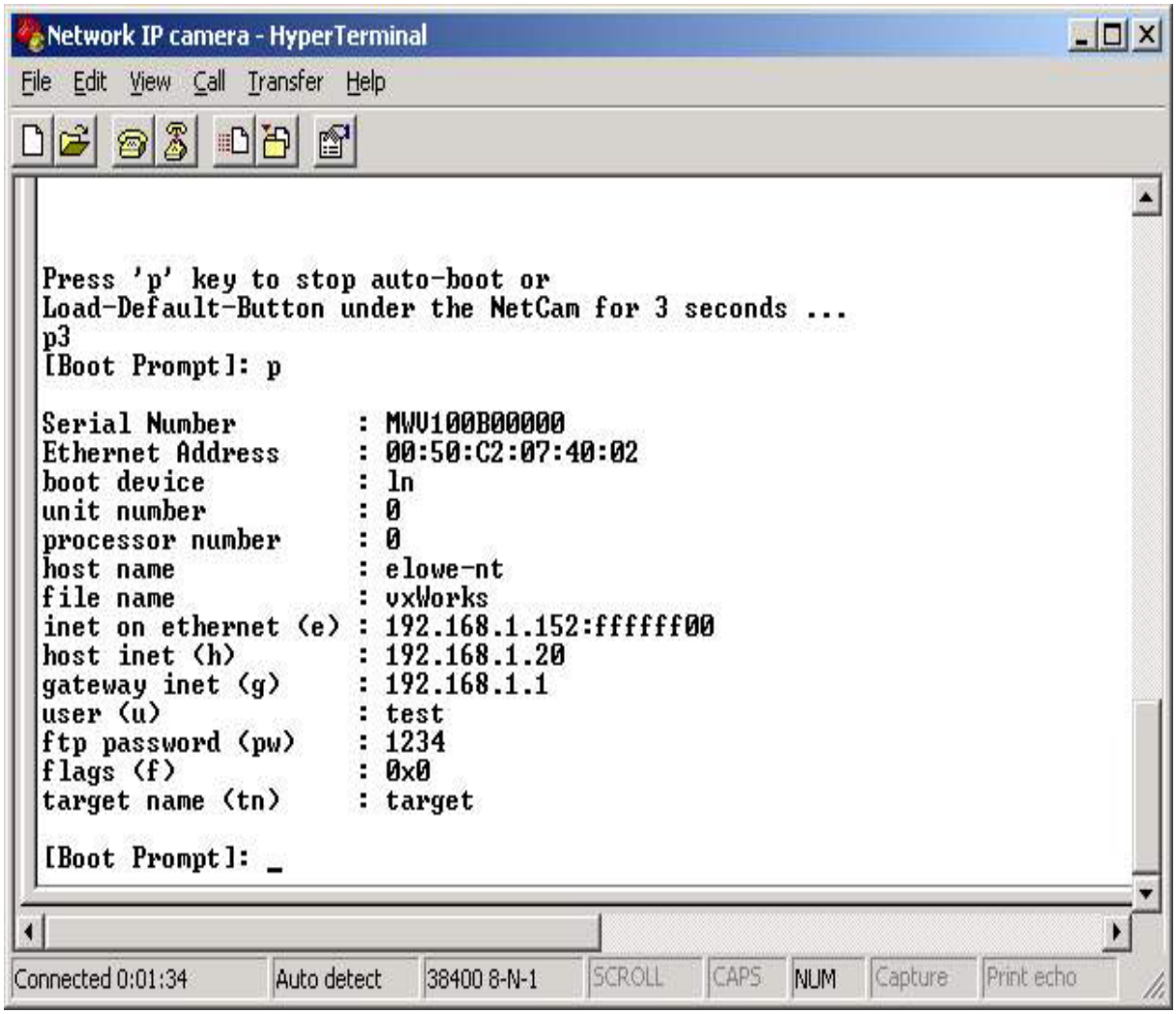
② Connect RS232 Cable to the serial port of PC that you have selected in '4.3.1 Configuring Hyper Terminal' and Network IP Camera serial port while Hyper Terminal is executed.

③ Supply the power to Network IP Camera.

④ After a while, the count down starts with the message "**Press 'p' key to stop auto-boot or Load-Default-Button under the NetCam for 3 seconds...**"
At this time, press 'p' key. Then, [Network IP Camera Boot] prompt shows like the below image.



⑤ You can see Network Configuration while [Network IP Camera Boot] Prompt is running by pressing 'p' key again.



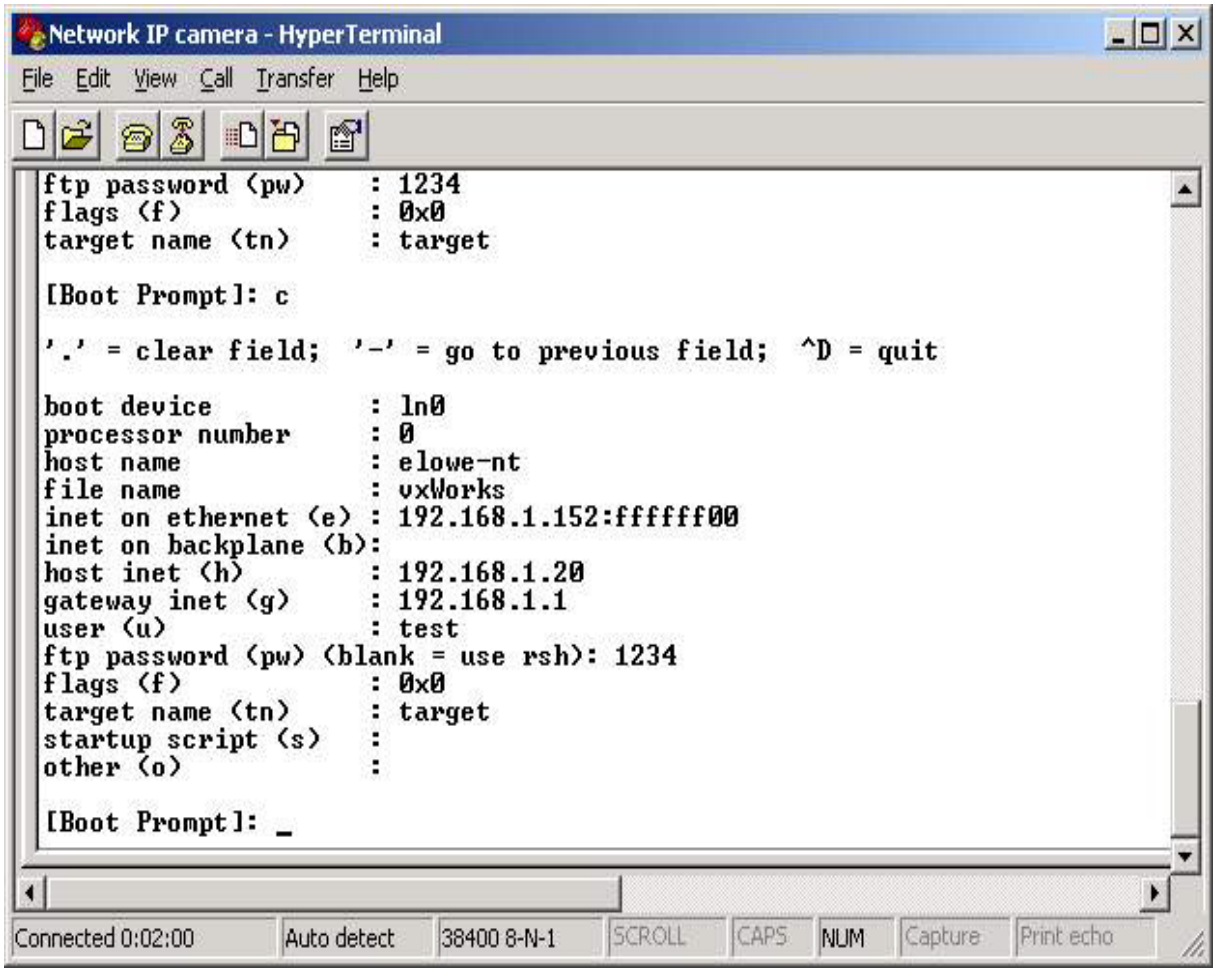
Here, inet on ethernet (e), host inet (h) and gateway inet (g) values are network configuration values. You should change these values in most case. If you don't know what value you should assign, refer to the network administrator.

Inet on ethernet (e) is IP address and subnet mask address of Network IP Camera. IP address and subnet mask addresses are separated by colon (:). For example, IP address is represented by decimal numbers delimited by dot (.) like '192.168.1.27'. Hexadecimal numbers like 'ffffff00' in the case of '255.255.255.0' represents subnet mask address. Note that the numbers of subnet mask value are not delimited by dot. See the example in the above picture.

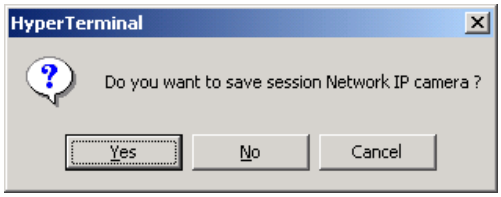
Host inet (h) is the address to which Network IP Camera tries to connect to upgrade its firmware program in flash memory. Network IP Camera first search this host on the network on booting sequence. For more information on Network IP Camera upgrade, refer to "**E. Updating Network IP Camera's Newly upgraded Program**".

Gateway inet (g) is the gateway address of Network Camera.

⑥ Type 'c' key to change the network configuration in [Network IP Camera Boot] prompt. If you type 'c' key, Network IP Camera shows you the information you can change its values and the current assigned values. You can change as the following figure.



⑦ When you terminate hyper-terminal program after you changed network configuration, hyper-terminal program asks you whether you save the session. If you save the session, you can re-use the hyper-terminal. To re-use the session you saved, click Start --> Programs --> Accessories --> Communications --> HyperTerminal --> Network IP Camera.. ht in the case of Windows 2000.



4.4 Accessing Network IP Camera Homepage

After assigning Network IP Camera an IP address, you may access Network IP Camera and monitor real-time image on Internet. You may configure Network IP Camera within its own pages through any standard Web browser on local or remote network.

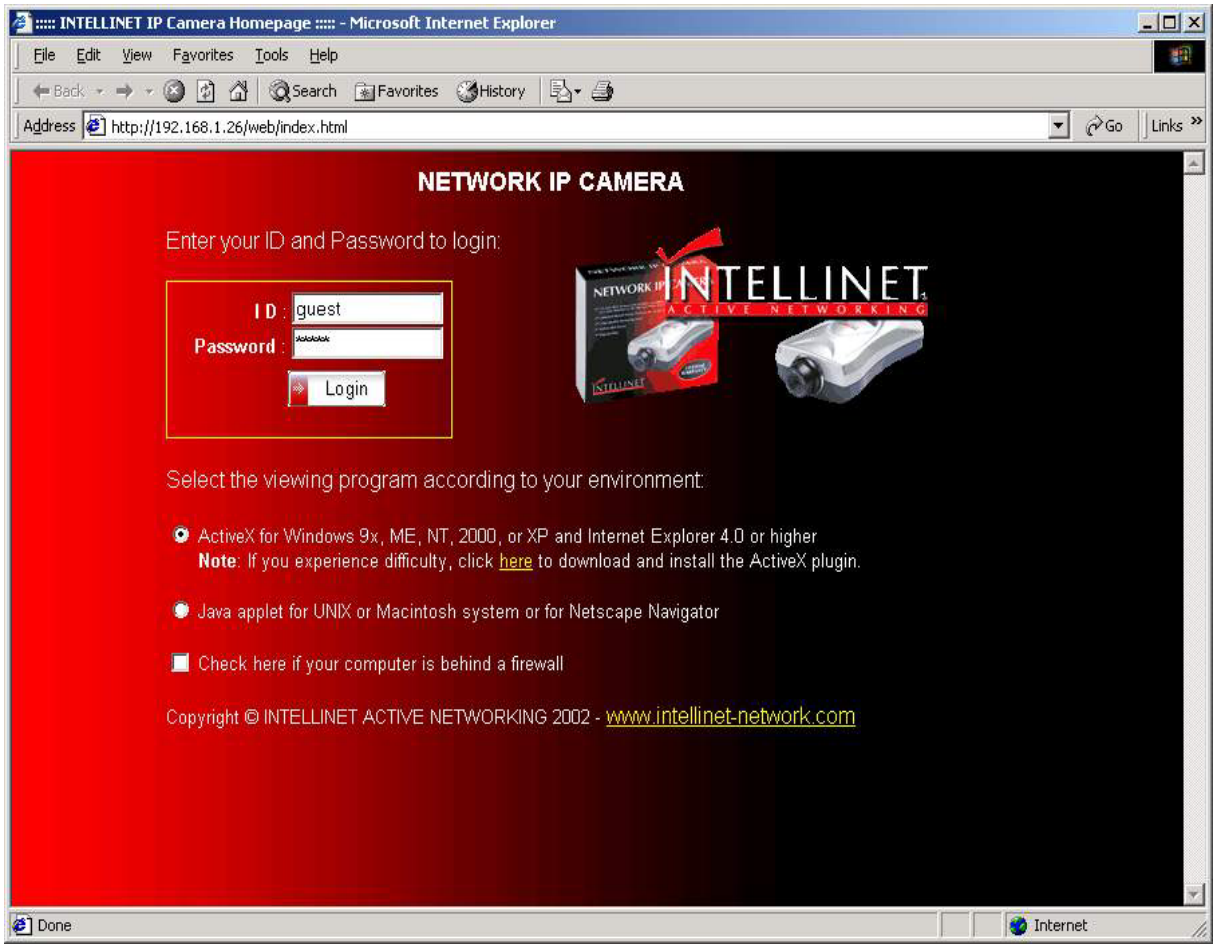
4.4.1 Starting Web Browser

Start your web browser by entering your Network IP Camera's IP address. And then you can see a build-in homepage.

Example) http://211.111.168.163/

4.4.2 Login Page

This page is to enter the Network IP Camera's built-in Homepage. To access this page, you may be required proper ID and Password.



1) ID and Password

To verify registered Network IP Camera users, there is a Login page. If you are to connect to camera, you should follow the Login procedures.

If you key in user's ID and password, you may access to a viewer to monitor real-time images. With administrator's ID and password, you may access to a real-time image viewer with administrator's authority.

The default value of both user's ID and password are "admin" and administrator may change it at Administrator Menu. But, each ID and Password must be composed within 10bytes. (e.g. 10 English letters).

For the guest, Network IP Camera has default ID and Password are "guest", but guest can't configure administrator tools at all.

2) Behind Firewall

If your PC is connected on a network where firewall is. In this case, you may not view real time mage properly because video TCP port of Network IP Camera is blocked. Common video TCP port (A default video TCP port of Network IP Camera is 80th port.) is blocked under firewall. If you are under firewall, you may view real time image through Network IP Camera's Server Push Viewer that transmit video through Web TCP port instead of video TCP port.

By clicking on "Behind Firewall" menu, you may directly connect Server Push Viewer when you access Network IP Camera homepage.

3) Active-X for MS Explorer User

For a Microsoft Explorer User, Active-X Control program is required. The program will be installed automatically when a user accesses to Network IP Camera. For Active-X installation on your PC, just click 'Yes' to the question if you want to install the program on pop-up window. If you cannot see images after installation, you should download and install it manually.

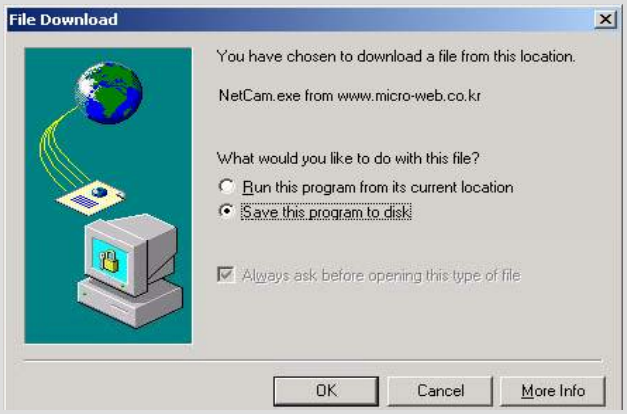
Active-X installation manually

If Active-X program fails to be installed automatically, you may install it manually.
The manual installation program is to be downloaded by clicking 'here' as follows:

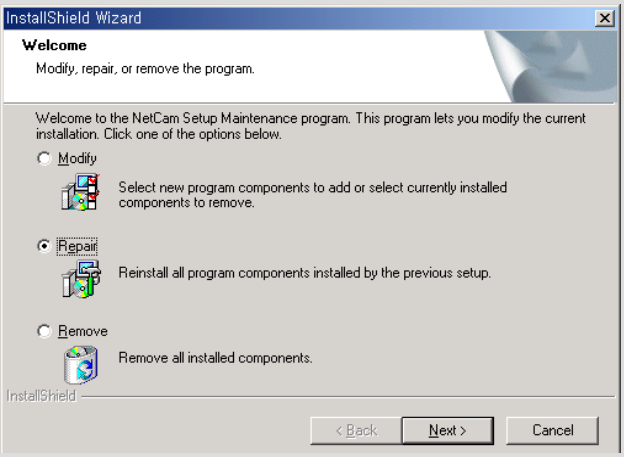
Note: If you have any problem when you install ActiveX, click here to download and install ActiveX manually

Please follow the instruction to install Active-X manually.

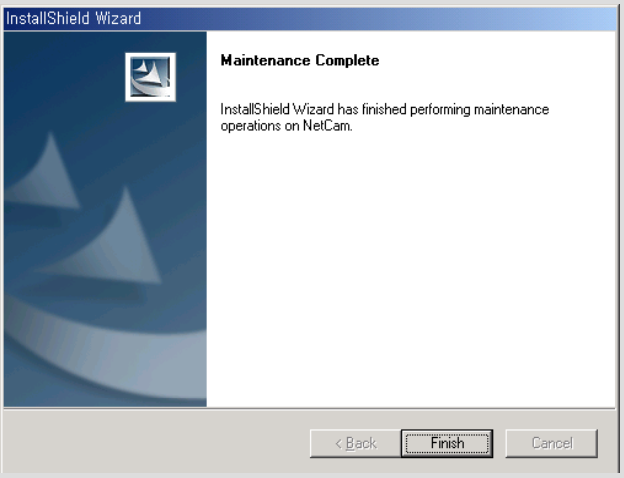
① Click "here"
② When the panel appears, press "open" if you want to install right away.



③ InstallShield Wizard appears after finishing download.
④ Check "Repair" then click "Next"



⑤ When installation is completed, press "Finish"
⑥ Go back to the Login page to access Camera homepage.



4) Java Applet for Macintosh or Unix System user.

Java Applet viewer is for a user who access Network IP Camera through a computer that does not Utilize MS Windows (OS) such as Macintosh computer, etc. Java Applet viewer is run with java virtual Machine that is installed on User's computer.

Macintosh and Unix System

Network IP Camera Active-X program is based on MS windows OS. Therefore it is Impossible to access Network IP Camera and monitor real time image through default viewer. If a user access Network IP Camera through Macintosh or Unix systems, Network IP Camera detects that OS is not MS Windows and it operates java based image viewer to show real time image.

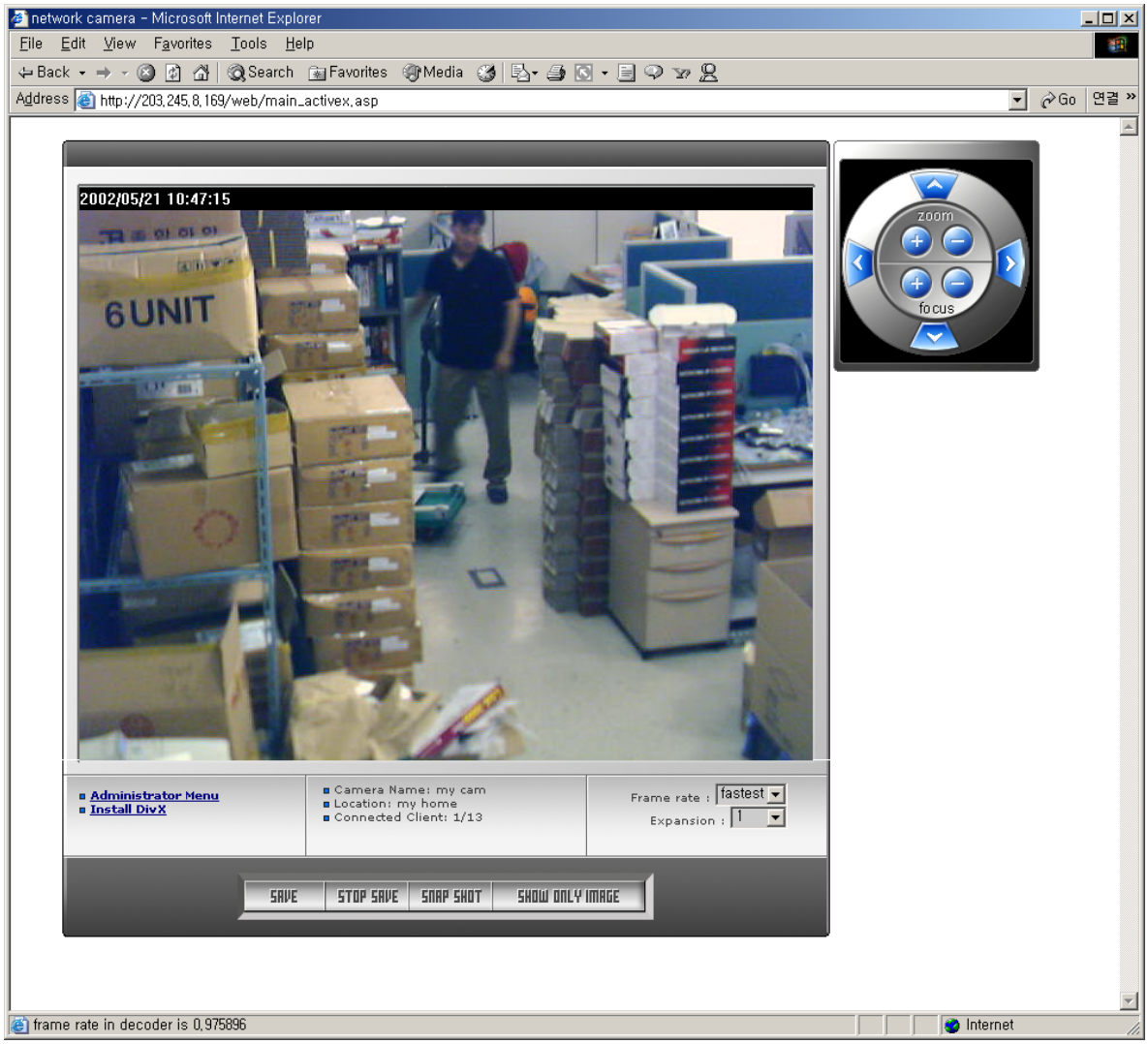
Some functions are not available for Java Applet.

NOTE

It is highly recommended that you select ActiveX viewer for Windows 95, 98, 2000 or NT and Internet Explore 4.0 or higher. If not, choose java applet viewer.

4.4.3 Network IP Camera's Homepage

Having accessed the login page procedure above, you may see the camera homepage.



1) Administrator Menu

This button is to access administration page. However, only the user who has authority as an administrator can access the page with administrator's ID and Password. (Refer to **Chapter 6. 'Configuring Administration Menu'**)

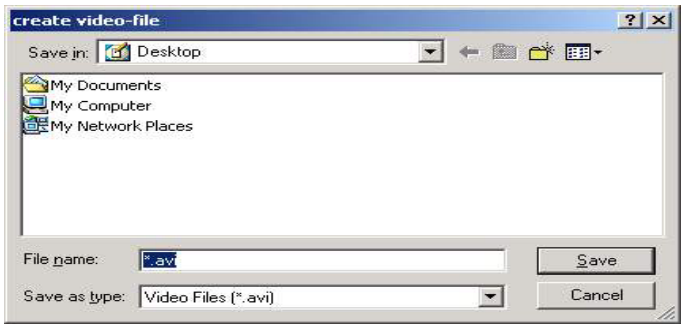
2) FAQ

A lot of questions and answers are provided here for troubleshooting. If users have another question that not answered here, please contact your dealer or visit www.intellinet-network.com.

3) Save, Stop save, snap shot, show only image

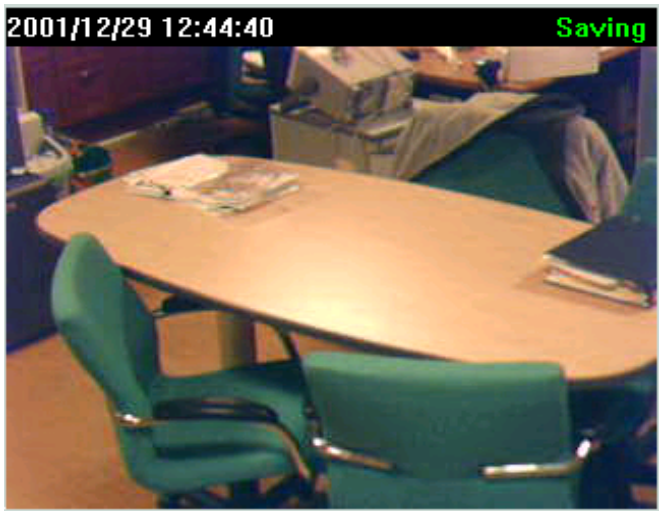
① Save, stop save

Users can save real time images from Network IP Camera on PC.



Press 'save' button then select folder that you want to save images. (The image is saved as an AVI file.)

Once it starts to save images, "Saving" message appears.

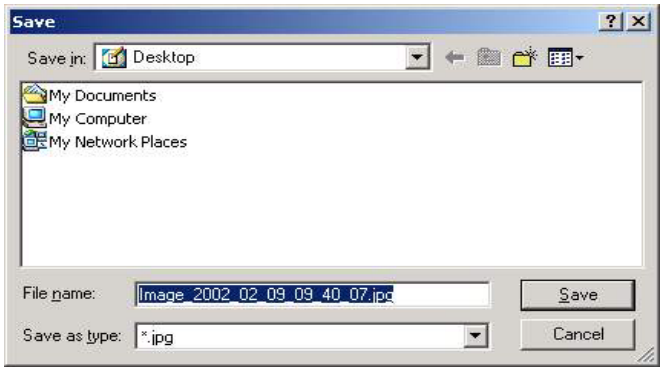


To stop saving, press "stop Save" button.

- **You may see the saved image by Window Media Player or Real Player.**
- **The AVI saving will be split every 20 minutes**
  For example) file name2002_04_22_15_00, file name 2002_04_22_15_20…
- **If you have any problem saving images, please download and install 'Divx' on Camera's homepage**

② Snap Shot

To save only one-cut image, press "snap shot" button and then select folder.



Save the image as JPG file. (Default file name dedicate the the date and time)

③ Show only image
When you want to see only video panel, press "show only image"

4) Camera Name

You can set a camera name or any text. Please refer to "**Chapter6.7 System Configuration**".

5) Location

This shows where the camera is located. Please refer to "**Chapter 6.7 System Configuration**".

6) Connected Client

This shows the number of client who is connected to Network IP Camera simultaneously. The number " /32"represent maximum concurrent user. This number may change according to memory possession. When you set image capture option on "Event Trigger Configuration" high, this number may decrease.

7) Frame rate

You may choose image transmission speed. If you choose 'Fastest", you can get images at fastest speed. The transmission speed depends on your network line's capacity and PC's performance. It is useful to limit the data transmission collision.

8) Expansion

You may select the image size from 0.5 to 2. This function may be used when you want to expand image size on your PC. (But resolution may not be changed at all)

9) PTZ Control button

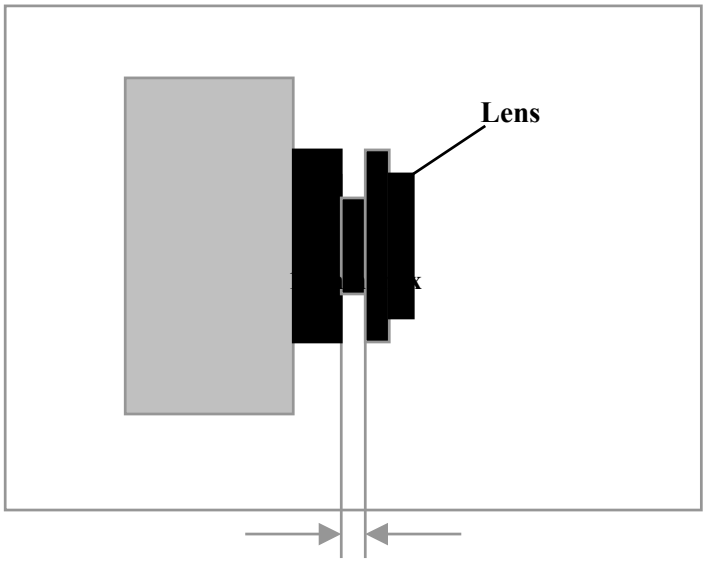
This button is only to be activated when the PTZ devices are connected to Network IP Camera (Refer to Chapter " **6.7**. **System Configuration**")

5 Adjusting the Camera Lens

5.1 Adjusting the Focus

In order for the Focus Assistant to access the full focusing range for your application environment, you now turn the lens in the clockwise or anti clockwise direction; unless you want to replace the lens, it should not be unscrewed more than 1.0mm apart from the Fixed Lens assembly.

***Adjust the camera focus while reviewing the picture quality on your Web browser.**



1.0mm max

NOTE

- A Good level of focus is normally achievable throughout several planes within the camera's focusing spectrum.
- Since optimum focusing is dependent upon the camera's field of view, it is important to scan the focusing plane from the closest to furthest perspectives before attempting any fine-tuning

5.2 Replacing the Lens

Because Network IP Camera is designed with a CS-Mount, the lens supplied with your product can be replaced with any standard C or CS lens, typically used within the surveillance industry.

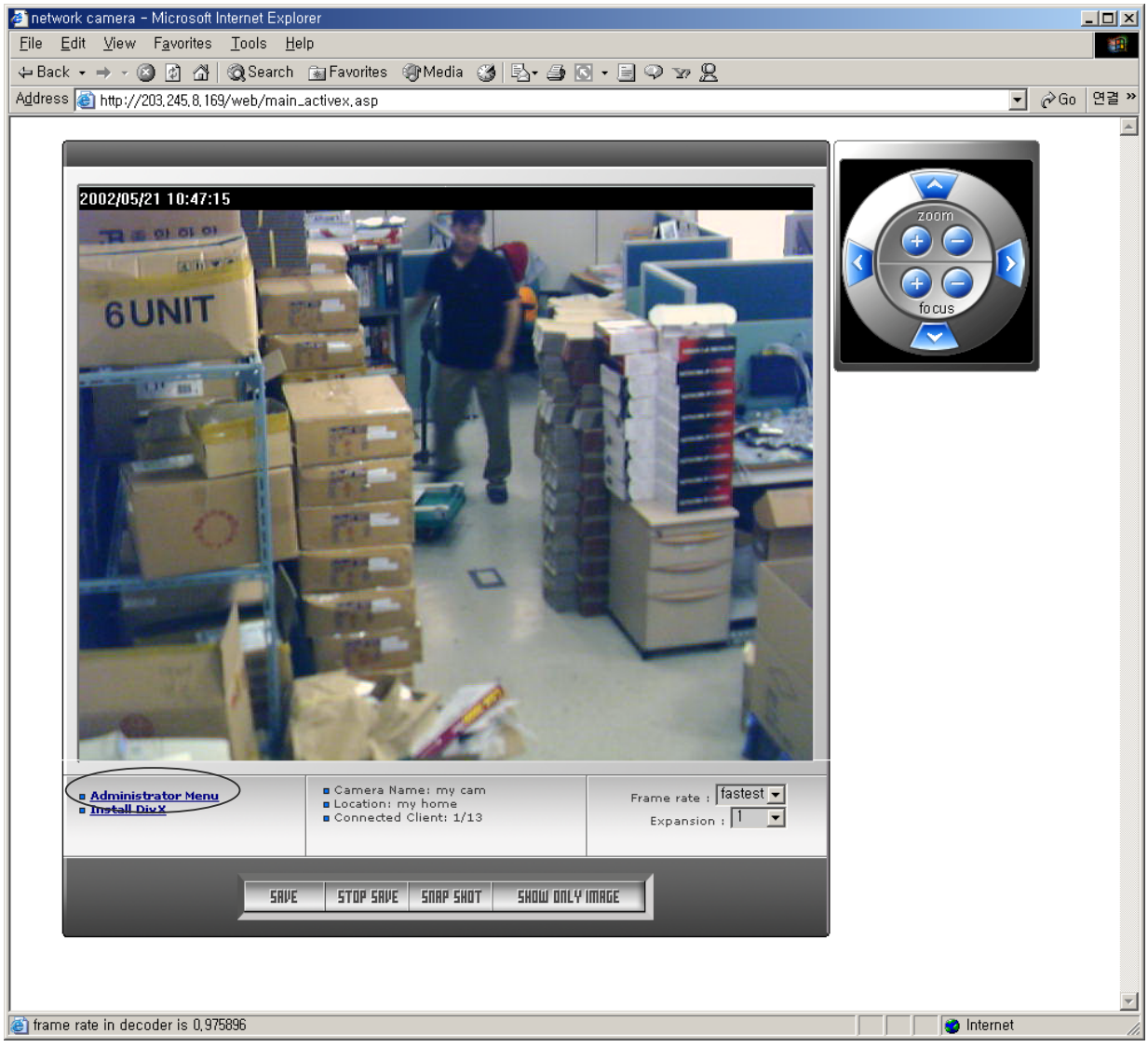
Follow the instructions below to replace the supplied lens with any C or CS type lens:

1. Unscrew Network IP Camera lens turning the lens in the anti clockwise
2. C-lens only: Attach the new lens to a C-CS Adapter
3. Screw the new lens onto Network IP Camera. If applicable, adjust the iris according to the prevailing light conditions.
4. Referring to Focusing the Camera under quiescent conditions, on page 29, **Adjusting the focus**.
5. Reload your Web browser and monitor the results from the product Home Page.

6 Configuring Administration Tools

You can control the configurations of Network IP Camera by Administrator's Tool.
Only authorized user can access administrator tool. If non-authorized users try to access it, you may see the caution message " You are not administrator".

You may control all configurations for Network IP Camera.



Press "**Administrator Menu".**

6.1 Administration Menu's Overview

The table below provides a one-step overview of the Administrations Tools:

Image Configuration	To configure compression rate, image size, brightness, contrast, etc.
Network Configuration	To configure camera IP, web server port, image transfer port
Admin, User Configuration	To configure user ID & Password
Event Trigger Configuration	To configure event trigger condition, image capture option, trigger output
Time Configuration	To configure date and time
System Configuration	To configure the camera name, location, PTZ and see the system information.
Home	Move to Network IP Camera homepage

To prevent any unauthorized use of Network IP Camera access is strictly restricted to defined users only. Administrator(s) has exclusive access to the product Administration Tools and can determine the registration, and access rights for all users.

Enter the default ID and Password, then click "**SUMIT"**
(Default ID and Password are all "admin")

CAUTION

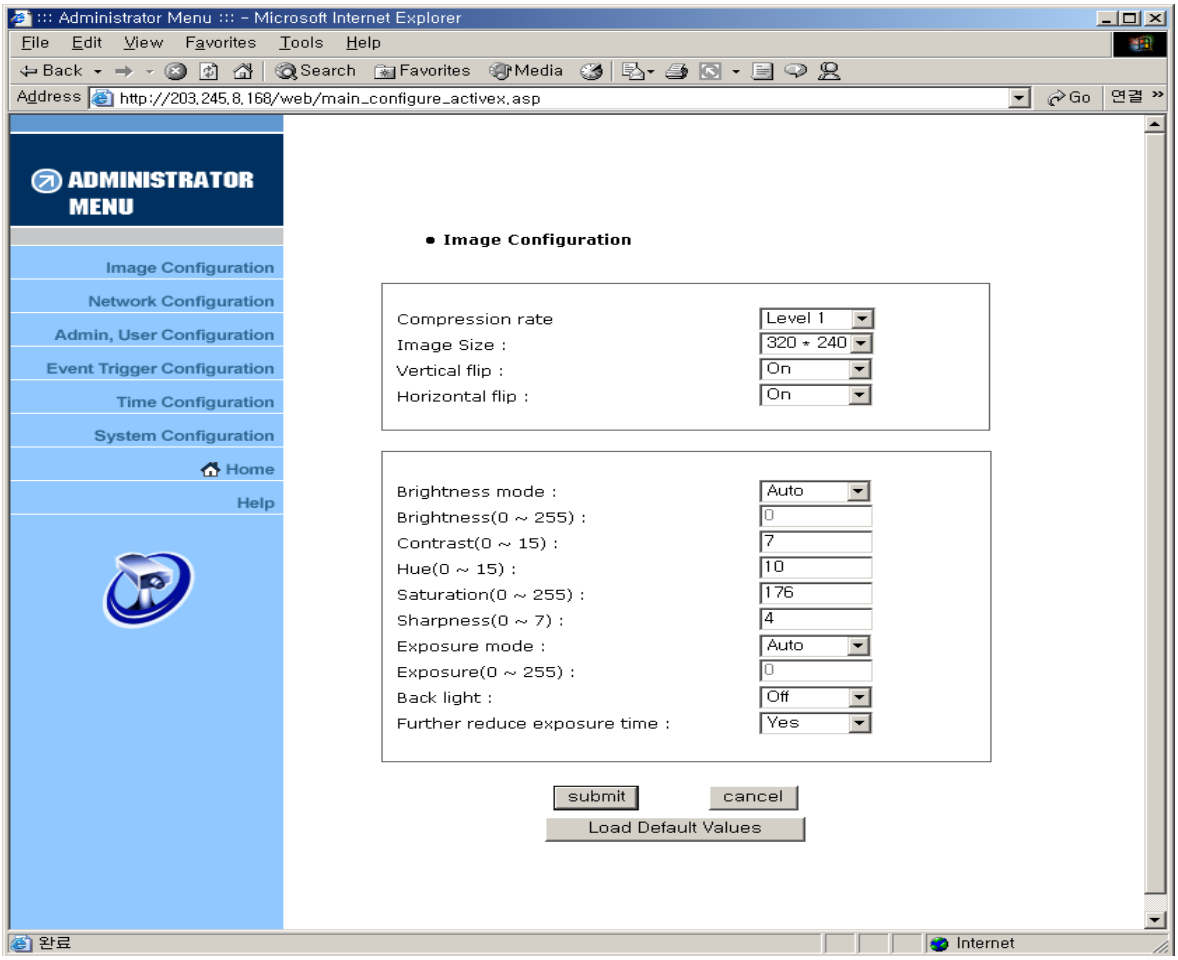
Although, the Administrator's default username and password (set to "admin" for all) can be used for logging in to the unit for the first time, it is highly recommended that you change the this password for your Network IP Camera as soon as possible – since all Network IP Camera products are shipped with the same ID and Password as default.

NOTE

Make sure to click "submit" after verifying configuration, and then you can get the right Configuration as you want, otherwise it won't be changed at all.

6.2 Image Configuration

This page is to focus the camera using the focus Assistant and define image attributes for your Network IP Camera.



① Compression rate

The file size of JPEG-compressed image depends upon the actual content of the image. Images containing much detail will generate larger files. Image quality is controlled through the level of compression; where, high compression yields small files, while low compression maintains higher image quality at the expense of larger files. The table below contains compression ratios for each step, derived from real-life tests:

Compression Rate	Level 1	Level 2	Level 3	Level 4	Level 5
QVGA	15	18	21	24	27
VGA	15	20	25	30	35

Level 6	Level 7	Level 8	Level 9	Level 10
30	33	36	39	42
40	45	50	55	60

② Image size

You may choose the image size VGA(640x480) or QVGA(320x240) and 160*120

Large sizes of image (VGA) yields lower frame rate, while small size maintains higher frame rate

③ Vertical Flip

To turn the image view upside down

④ Horizontal Flip

To switch the image view right from left

⑤ Brightness mode

You may select "Auto" and "Manual"

⑥ Brightness

As a number is higher, image looks brighter. (Possible to input digits from 0 to 255)

⑦ Contrast

As a number is higher, contrast becomes clearer. (Possible to input digits from 0 to 15)

⑧ Hue

As a number is lower, color becomes pink. On the contrary, as a number is higher, color becomes green.

(Possible to input digit from 0 to 15)

⑨ Saturation

As a number is higher, color becomes deep (Possible to input digits from 0 to 255)

⑩ Sharpness

As a number is higher, color becomes vivid. (Possible to input digits from 0 to 7)

⑪ Exposure Mode

You may select "Auto" and "Manual"

⑫ Exposure

As a number is higher, image becomes brighter.(Possible to input digits from 0 to 255)

⑬ Back Light

When the light is not enough, "Back Light" may help to see the image.

⑭ Further reduce exposure time

To reduce exposure time from 1/20 to 1/100 under heavy light.

Submit

Transfer a current configuration data to Network IP Camera. After transferring data.

Network IP Camera works with changed data

Cancel

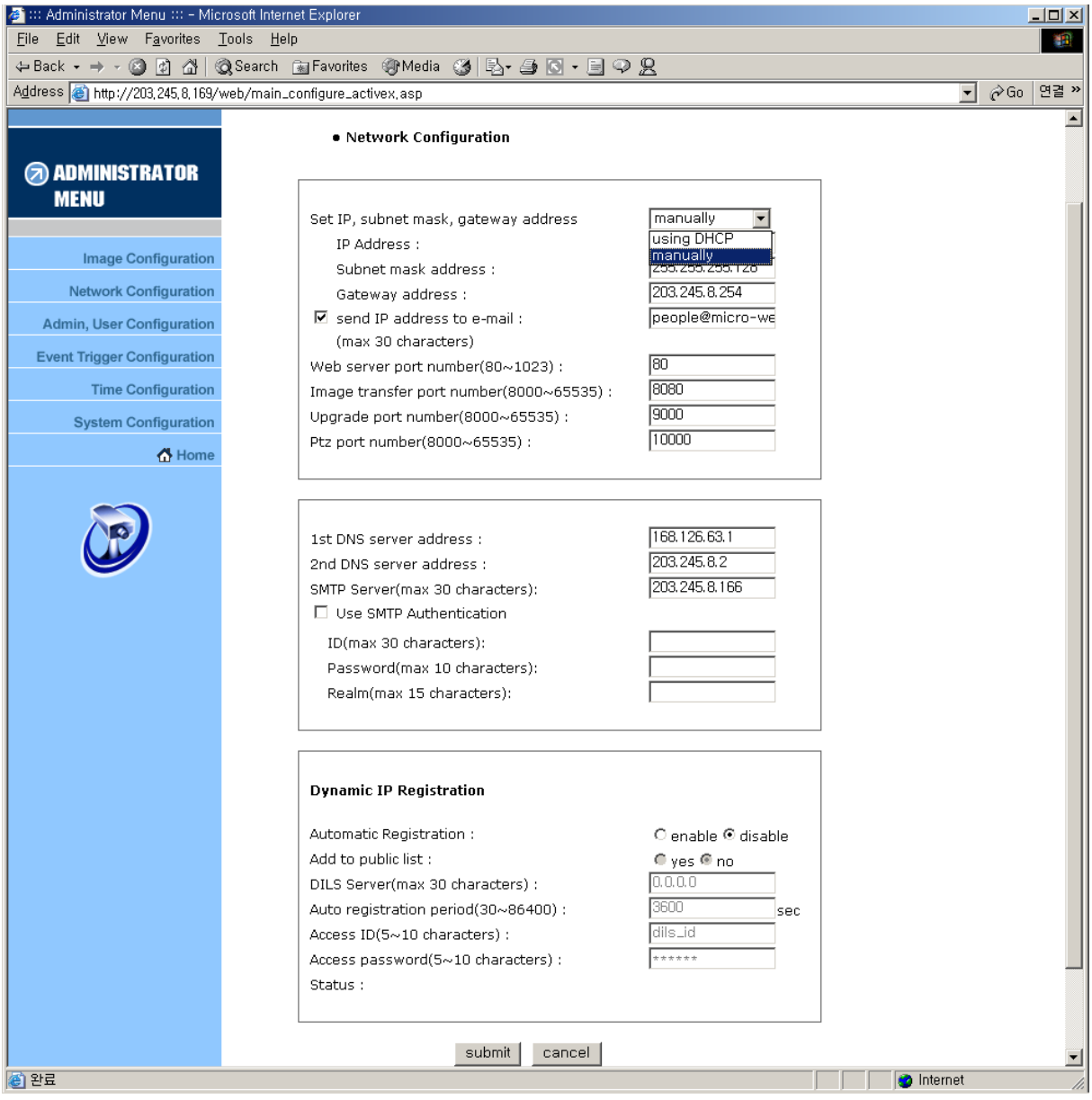
Cancel all the configuration you made.

Load Default Values

Set the configuration as default values. (No need to press "SUBMIT")

6.3 Network Configuration

This page is to define network type and addresses of the Network IP Camera. You can configure Camera' S IP, DNS server address and DILS registration, etc. Each configuration takes few seconds for booting after press "Submit".



① Set IP Address, Subnet mask, gateway address.

To set the IP address, Subnet mask, and gateway address manually, you may select "manually" in combo box.

In case of selecting "manually", you can configure them with the IP installer as well as this page.

(If you have trouble configuring network system information, please ask your network administrator.)

To set DHCP, you may select 'using DHCP'.

When selecting "using DHCP", the IP address, Subnet mask address and Gateway address may not be activated at all. Under DHCP selection, the IP address may be sent to an email address whenever IP address is changed. Users in a local network area may check the IP address through IP installer.

NOTE

If you select "DHCP", you may see the rebooting message "Now the Network Camera is rebooting to apply the changes..." on Web Browser. After completing rebooting, Operating Status LED blinks once per second. (The message may not be changed at all so you must check whether the Operating Status LED blinks.)

To select DHCP, you must have DHCP server in the network. Otherwise, the IP address will be rebooted automatically as the previous IP address. It may take 4 minutes for booting.
After rebooting, please reenter the previous IP address.
You may see the fail message from "Network Configuration" page.

② Send IP address to e-mail

To send camera system information (**Camera Name, Camera Location, DHCP IP address**), check in a text box and enter you email address. (You should configure your SMTP server information first)

③ Web Server Port Number

To set the Port Number for the Web Server. (The default port number is '80' and users can select from 80 to 1023)

④ Image Transfer Port Number

To set the port number for the image transfer. (The default port number is "8000" and users can select from 8000 to 65535)

⑤ Upgrade port number

To set the Port Number for upgrading firmware. Default port number is "9000" and users can select from 8000~65535.

⑥ PTZ port number

To set the port number for PTZ control. (Default is '10000' and users can select from 8000 to 65535.

CAUTION

Be careful not to duplicate port number between Image Transfer Port Number and Upgrade port number. If it is duplicated, the warning message may appear.

⑦ 1st, 2nd DNS server address

To map between IP address and domain name, you should enter you DNS server address.

If a user set the DNS server into camera, users can configure SMTP server, FTP server, NTP server with its domain name.

DNS (Domain Name System)

DNS (Domain Name System) is to map between IP address and domain name. Every network device on the world has its IP address to be connected on Internet. And the device is to be connected not with its domain name but with its IP address. Common users are not familiar with IP addresses but the domain names.

If a user accesses a certain network device with its domain name, DNS server resolves the domain name into an IP address of the device and replies the result to the user. A lot of DNS servers are not on Internet worldwide.

⑧ SMTP server

This to enter the SMTP server IP address or host name to send camera system information by an email. You should configure this first to get camera system information by email.

⑨ Use SMTP authentication

If you need user authentication for using the SMTP server, check in a box and enter you ID, Password and Realm for your SMTP server. (The Network IP Camera's SMTP authentication is supporting "LOGIN" method)

⑩ Automatic Registration

This is to register the Network IP Camera to the DILS (Dynamic IP Link Service) server.

You should make this "enable" to register your the Network IP Camera to the DILS Server.

⑪ Add to public list

The public list contains the Network IP Camera to which ownership is not issued or whose owner allows it to be listed in public. If you make this "enable" mode, your the Network IP Camera is listed in public.

For details, please refer to "DILS User's Guide"

⑫ DILS Server

Enter an IP address or host name for the DILS server

⑬ Auto registration period

This is a time period of connection of the Network IP Camera to the DILS server. Generally, recommended 3600secs (1hours).

⑭ Access ID, password

The value of "Access ID and Password" is a password to identify the ownership of you the Network IP Camera at the DILS server. With this ID & Password, you can find you registered camera from DILS server.

⑮ Status

This is to state "Fail" or "Success" for your DILS registration.

SUBMIT

Send configured data by user to the Network IP Camera.

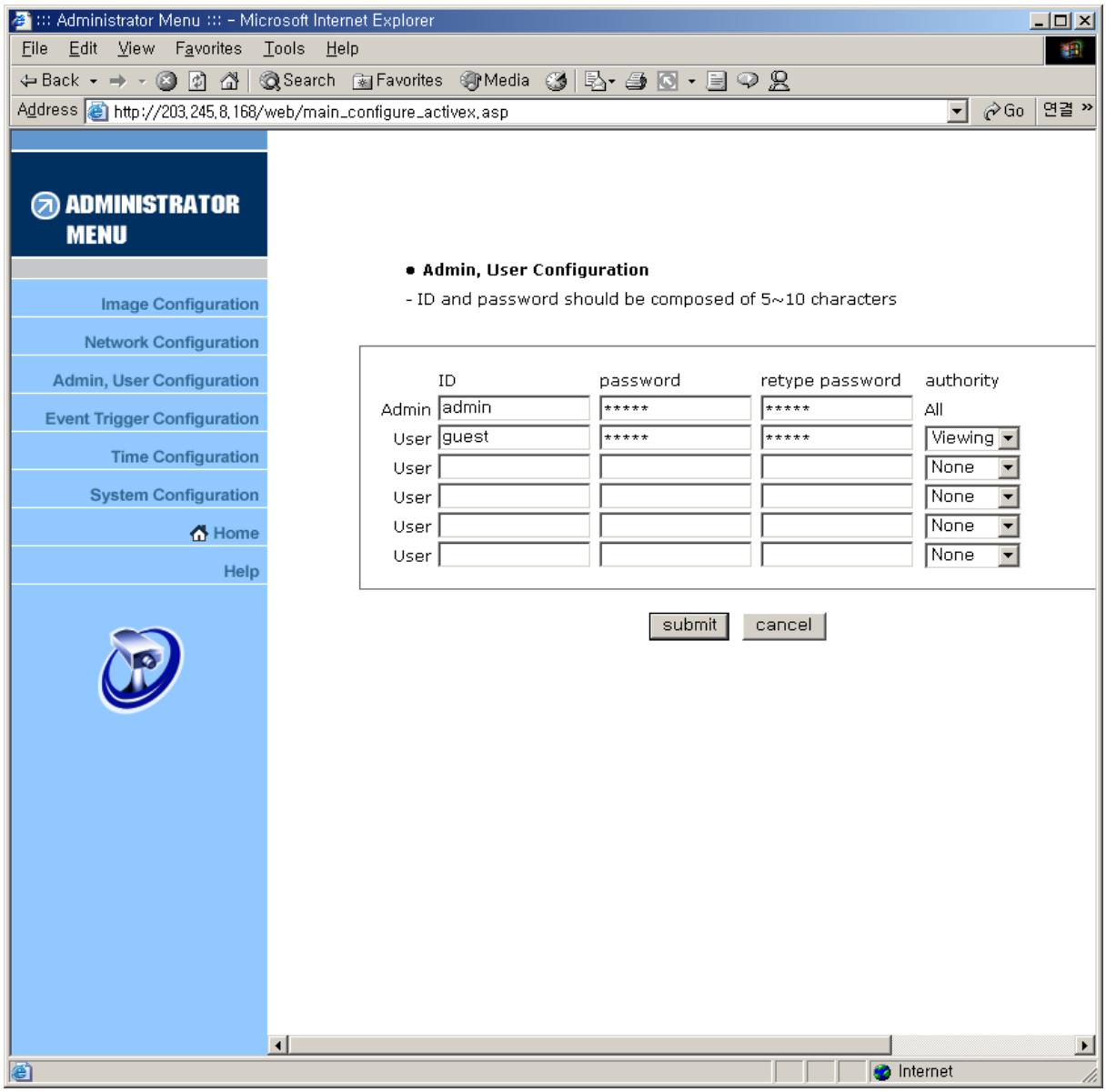
DILS (Dynamic IP Link Service)

When an the Network IP Camera® is installed under the environment of xDSL or Cable Modem connection, its IP address changes whenever it reconnects to the internet Service Provider. In this case users who don't know the changed IP address cannot get access to the Network IP Camera®. DILS (Dynamic IP Link Service) is necessary for those users. The Network IP Camera with dynamic IP is registered to the DILS server to make it easy for users to find the changed IP address when they want to access. An owner of the Network IP Camera® can issue his/her ownership to registered The Network IP Camera® for easy management.

For details, please refer to "DILS User's Guide from Web site www.intellinet-network.com

6.4 Admin, User Configuration

This page is to configure IDs and Passwords of an administrator and 5 users.



(1) User Account

There are one administrator's account and 5 user's accounts. Account name can be changed.

(2) Password

If you want to open your Network IP Camera to everyone, you may not change default user's ID and Password, However you should change administrator's ID and Password with unique Ones of yours.

(3) Access rights

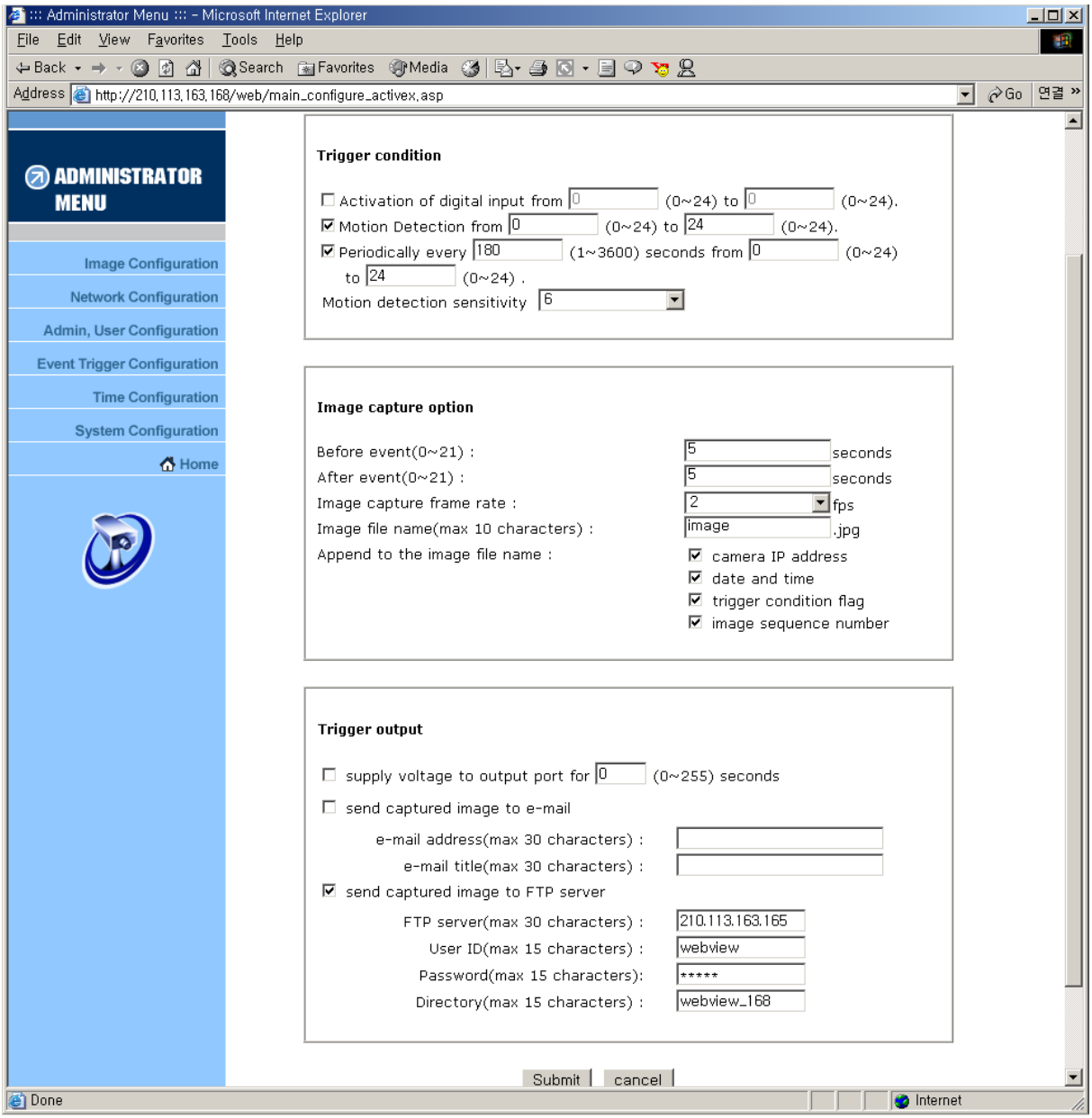
Administrator may give or forfeit users' right of viewing control. With default setting Administrator has all authority of configuration and normal user doesn't have any right except one who can access login page to see the image defaulted "guest" for ID and Password.

ID and Password Limitation

It is very important to compose any ID or Password within 10 bytes' limit. 10 bytes are equal to 10 English characters.

6.5 Event Trigger Configuration

This page is to designate Email address or FTP server to receive captured images by setting SMTP or FTP setting. You may connect external devices such as infrared Sensor or Alarm Sensor etc. use with provided terminal block. Refer to chapter "F. I/O Connector "



(1) Trigger Condition

This is to select option how to send an event signal to Network IP Camera.

① Activation of digital input port

Network IP Camera receives an event signal from external devices such as infrared sensor

Alarm sensor etc.

② Motion Detection from……

This is to detect motion from camera by S/W data comparison.

When you select "Motion detection", the Network IP Camera detects a motion triggered by camera lens. To detect motion the camera compares a previous image from present image.

When the motion is detected, the camera recognizes the data changing through comparing the previous image data with present one.

NOTE

In a dark place without light, it may never detect the motion because its image wouldn't be changed at all.

③ Periodically…..

The Network IP Camera itself is to be triggered automatically by setting.

You may set the periodical event time for certain hour.

④ Motion detection sensitivity

This is to configure the level of motion detection sensitivity.

The level is composed of 9 levels from 0 to 9.

As the level is higher, the sensitivity is much higher

.

NOTE

In case of level 9 for sensitivity, the camera may detect a tiny motion even a light changes, so the event can be trigger so often. In case of level 1 for sensitivity, the camera may not detect a tiny motion, though it can be missed some little motion.

It is strongly recommended to configure it as the level of 3 ~6 for sensitivity.

CAUTION

Do not use motion detection function for security purpose because Motion detection function is only developed to use for monitoring purpose.

When you want to use it on the purpose of security, you should use certain sensor such as infrared, motion sensor according to your purpose.

(2) Image capture option

This is to configure image capture option when an event is triggered.

① Before Event

You may set the starting time to capture image before event is triggered.

(Input limitation is from 0 to 255 seconds.)

② After Event

You may set the finishing time to capture image after event is triggered.

③ Image capture frame rate

Set the frame rate from 1 to 15fps when the image is being captured.

④ Image file name

You may designate image file name to send Email or FPT after image is captured.

All captured image are saved as a JPG file. (Example. "File name 000".JPG)

⑤ Append to the image file name

You may append some information to Image file Name Camera IP address

A. Camera IP address : Ex) "file name _192.168.1.19.JPG

B. Date and time : Ex) "file name_20020218150030.JPG

C. Trigger condition flag

In case of choosing "Activation of digital input port", "D" may be appended to image file name. Ex) "file name_D.JPG"

In case of choosing "Periodically every…", "P" is appended to image file name.

Ex) "file name_P.JPG"

D. Image sequence number

If you select this option, you may classify the file that has same extend name.

Consecutive numbers are from "000" to "999"

Ex) When you designate file name as "camera" and select "Image sequence number", the file name appears " camera001.JPG, camera002.JPG ….camera999.JPG"

Image capture option limitation

Configuration for image capture option affects memory capacity. If you configure this option to excess memory size, the Warning message " Not enough memory…" appears.

The total image capture frame rate must be limited 45 fps due to memory size.
(Before event time + After event time) x Image capture frame rate must be under 45.

For example, in case you configure "Before event" as 3 seconds, "After event time" as 2 seconds and "image capture frame" as 3fps, the total image capture frame rate is (3 + 2) X 3 = 15 fps.

If warning message appears, please reduce the value of the option.

(3) Trigger Output

This is to configure digital output states and control script. Network IP Camera sends captured image via E-mail or FTP server when connected external sensors detect events.

① External devices signal output

This is to supply voltage to output port when events are triggered. (This option is only activated when you select "Activation of digital output" option in previous "**Trigger Condition**" option.)

② Send captured image via E-mail

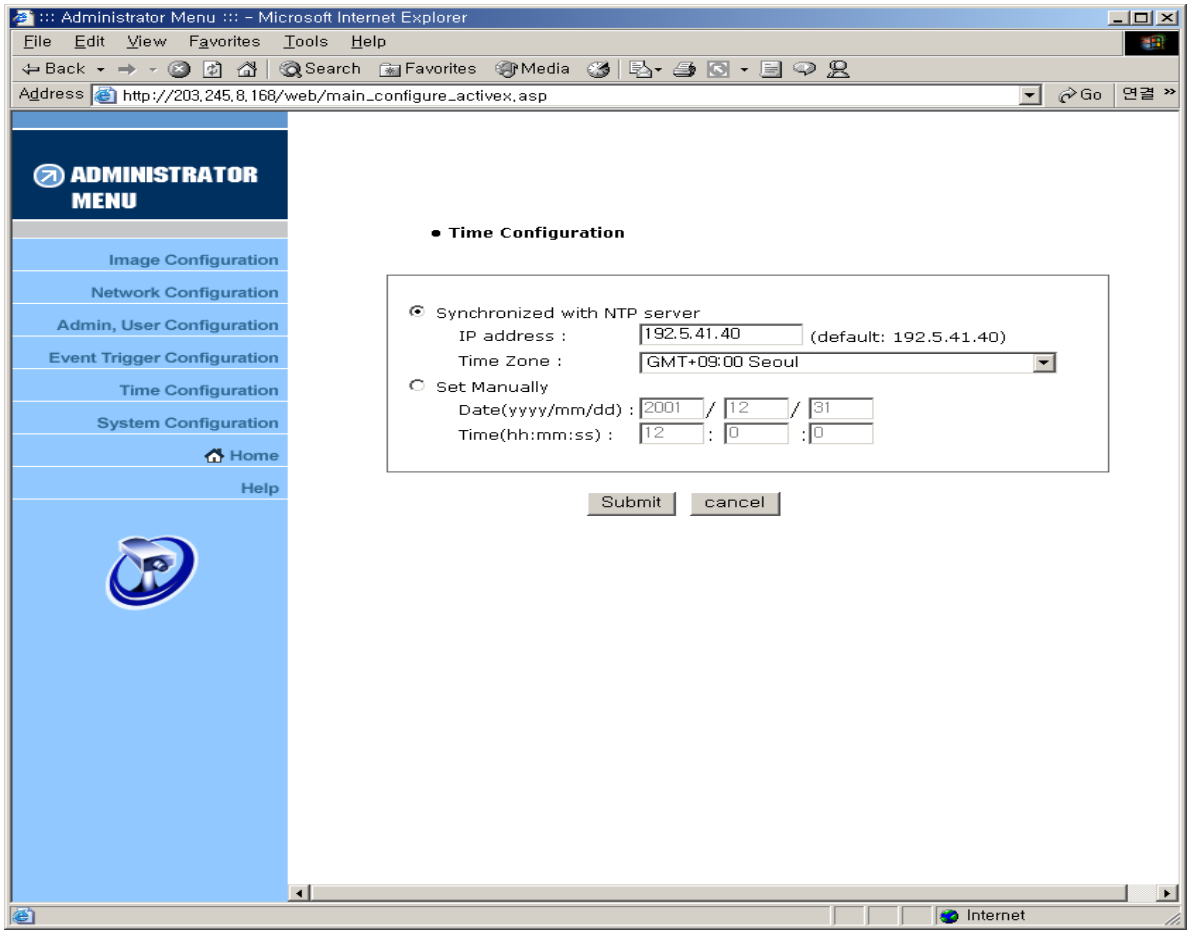
This is to designate a person to receive captured image via Email.
Network IP Camera sends captured image to designated E-mail address through SMTP server.
You may configure SMTP server and E-mail address where you want to receive. (E-mail address must be composed within 50 bytes. 50 bytes are equal to 50 English characters.)

③ send captured image to FTP server

This is to send captured image from Network IP Camera when an event is triggered.
Enter ftp server IP address, User ID and Password and select directory to save image.

6.6 Time Configuration

This page is to configure date and time.



(1) Synchronized with NTP server

Network IP Camera Date & Time automatically through NTP (Network Time Protocol)server. NTP Server is based on Greenwich time. Select NTP server, IP address and Time zone to set the date and time automatically, then press, "**SUBMIT**". It may not work due to the possible network error; in this case, you can select other NTP server and IP address or you can set the date and time manually. Once Date & Time configuration is already set, you don't have to configure again whenever you connect to Network IP Camera.

(2) Set manually

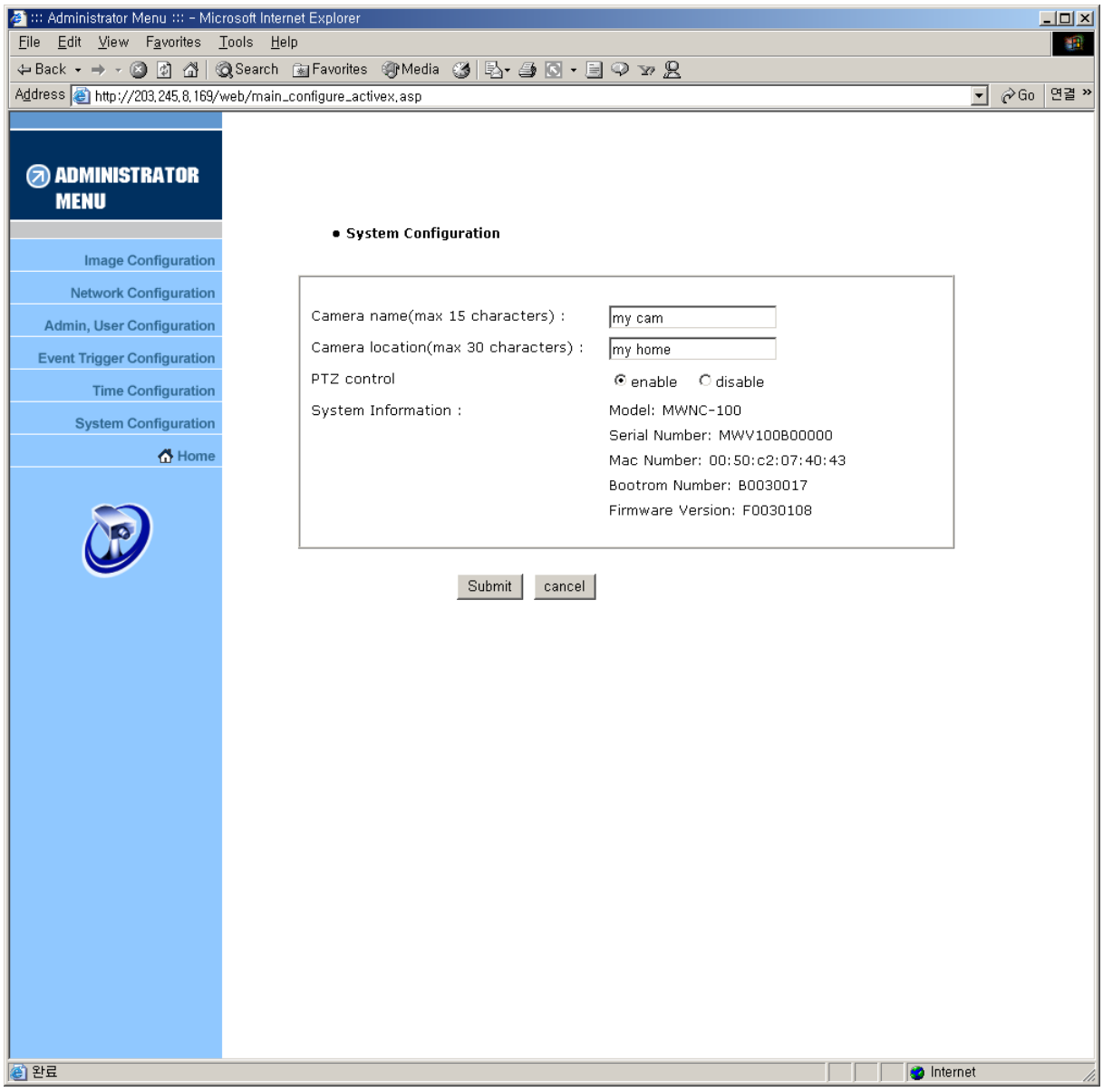
Enter the Date and Time manually, then click "**SUBMIT".**

NOTE

Network IP Camera does NOT support RTC(Real Time Clock), in case you choose "Set manually" option. Network IP Camera reinstate as default value "2001/01/01 00:00:00". To configure Date & Time, it must be reconfigured.

6.7 System Configuration

This page is to configure camera name, location, and image sensor oscillator for frequency, PTZ control and System information for Network IP Camera.



(1) Camera name

This is to configure camera name for the front-page view. Camera name should be composed within 15 bytes. 15 bytes are equal to 15 bytes English characters.

(2) Camera location

This is to configure camera location for the front-page view. Camera location should be composed within 30 bytes. 30 bytes are equal to 30 bytes English characters.

(3) Set image sensor oscillator for

This option is to select image sensor oscillator according to the frequency.

If you select incorrect, the image would be poorly lighted.

- **This function is only to be activated if the version of your camera is over the version of firmware 0030-102.**

(4) PTZ control

This is to configure PTZ control mechanism of Network IP Camera.

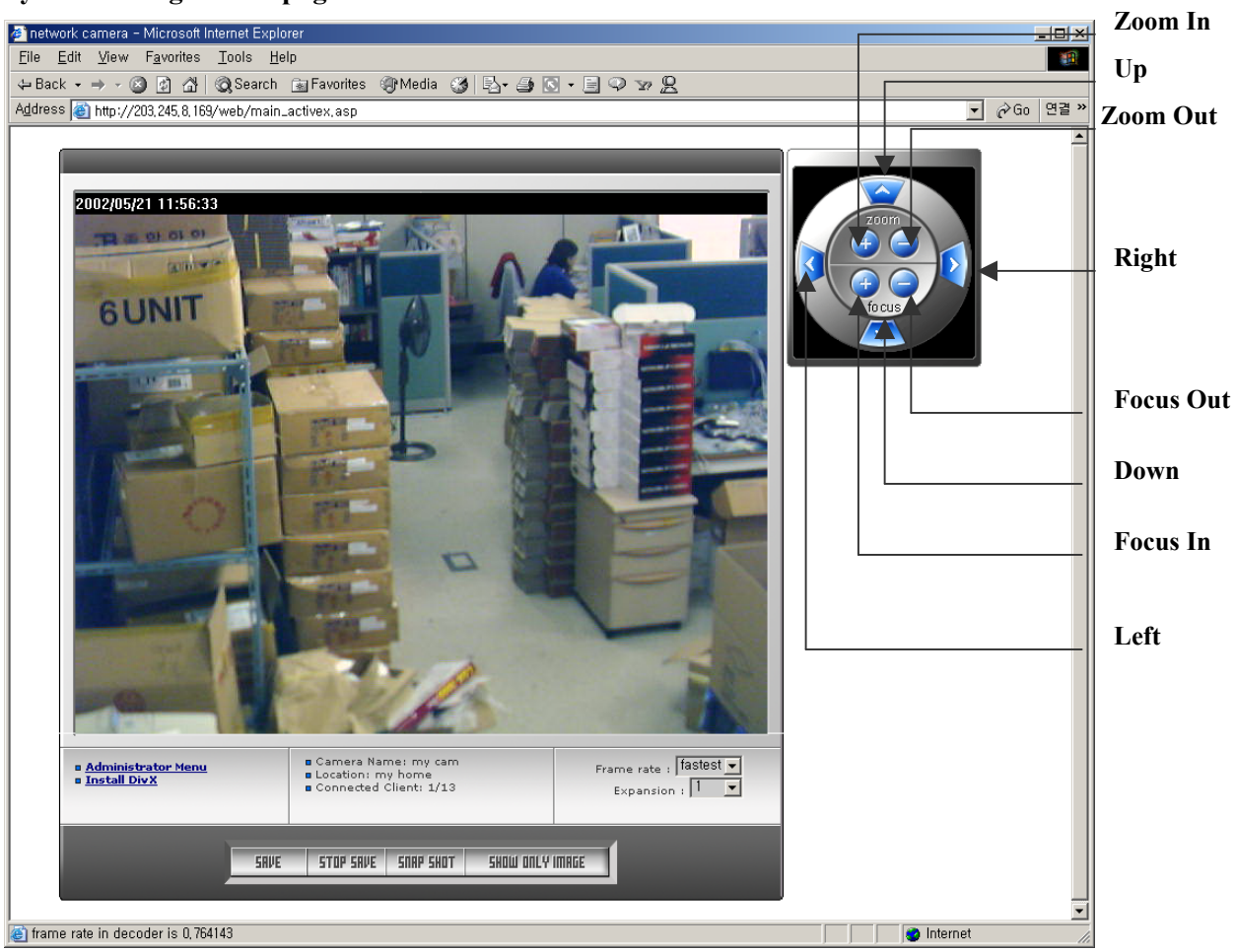
You may select PTZ control enable or disable. Only if PTZ devices are connected to Network IP Camera, you may select "enable" mode, otherwise, the error message "PTZ is not attached to Network IP Camera" appears.

(5) System Information

This is to check system information for Network IP Camera. You may see the model name, serial no., Mac no., and Bootrom & Firmware version. (Refer to the Chapter ' **Appendix E. Updating Network IP Camera's newly upgraded Program**.)

7 PTZ control

This page is to control PTZ function. This PTZ control box may be activated only if PTZ external devices are connected to Network IP Camera and configure PTZ control enable in System Configuration page.



Pan/Tilt Button

①	**Up**	Move up
②	**Down**	Move down
③	**Left**	Move left
④	**Right**	Move right

Zoom Button

①	**Zoom In**	To scale up the image
②	**Zoom Out**	To scale down the image

Focus Button

①	**Focus Near**	To focus near
②	**Focus Far**	To focus far

All function is working while you pressing button. For example, while you are pressing the right button, Network IP Camera is moving to right.

Appendix

A. Technical Specifications

Image

Resolution: 640x480, 320x240

Standard JPEG Compression – 10 levels of compressions

Network

10baseT Ethernet or 100baseTX Fast Ethernet

Twisted pair category 5 cables, Standard RJ45 connector

Supporting protocol: TCP/IP, UDP, PING, ARP, FTP, TFTP, and HTTP

Configuring is achieved by private setup program and Web server built in administration page.

Image Sensor

1/3" inch CMOS censor

326,688 pixels, 24-bit color, YUV digital output

Automatic exposure/Gain/White balance control

Image enhancement – brightness, contrast, gamma, saturation, sharpness, etc

664x492 pixel array elements

Electronic shutter: 1/30 s ~ 1/15734 s

Auto back light compensation: Automatic back light on or off depending on the lighting condition.

Lens specification

Replaceable standard CS mount lens

Focal length 6.0 mm, Angular field of view 54°, Object distance 0.1m to infinity

Maximum Relative aperture F1.8

C-Mount adapter available

Hardware

32bit RISC Net ARM CPU

ZORAN hardware compression chip

384 Kbytes video frame buffer

2M flash memory

SDRAM 8Mbyte

12V Power supply adapter included

Under 6W power consumption

System Requirements

Operating systems: Windows 9x, Windows NT/2000, Linux, Unix, Mac, etc.

Internet Explorer 4.0 or higher.

JAVA applet for no PC user (Mac or Unix)

I/O Connector

D-sub 9pin RS232 connector

1 Input to trigger the camera on external events.

1 Output of 12 V to signal external devices, max 150 mA

Installation

Assigning IP address via IP installer program

Approvals

EMC: FCC Class A, CE EN55022/1994, EN61000-3-2 & 3: 1995, EN50082-1: 1997

Operating Temperature

0-50'C

Others

Operating Status LED, Power LED, Image Capture LED, Network Packet Transmit LED

EEPROM clear button

B. FAQ

Frequently Asked Question (FAQ)

Asks for the features

1. What is Network IP Camera?

Network IP Camera is a built-in web server camera. Network IP Camera is consisted of 3 components as Camera Module, Web server, and networking device. Network IP Camera captures, processes, and transmits digital through network. As Network IP Camera itself operates as a Web Server, it does not require other dedicated server connection as PC does. By installing Network IP Camera itself at the desired site, your may monitor views from remote site.

2. What kinds of devices are needed to install?

It needs no other equipment except power and network cable.

3. What is maximum transmission speed?

Network IP Camera compresses and transmits 30frames per second on 10 base-T Network. However this speed is not equal to every user. Because transmission is depends on performance of user's PC and network bandwidth. And there are two viewpoints to calculate transmission speed.

The maximum transmission speed is 30 frames per second from user's viewpoint. However, it does not mean that everyone can receive 30frames peer second. Because transmission speed also depends on user PC performance and network line capacity.

Network IP Camera can transmit to up to 25 users simultaneously. If 5 users are receiving 10 Frames per second, the total frames that Network IP Camera to transmit are 50 frames per second. In this case, Network IP Camera transmits 50 per second from its viewpoint. And the total size of 50 frames' images is under the network bandwidth. When Network IP Camera is on 10 base-T network, the line can transmit 123 frames of 3KB-images per second.

4. What is the maximum number of users to access Network IP Cameras simultaneously?

Network IP Camera can support up to 40 persons at the same time. The capacity for users is fixed to 35 persons to support already accessed users at rapid transmission speed. When 35 persons access the camera, users can receive 1 frames per about 5 seconds.

Asks for the Installing and Running Network IP Camera

1. What network Line can be used with Network IP Camera?

All network lines (except telephone lines) can be used, although telephone lines may be used through PCs to connect to Network IP Camera remotely. Network limes such as xDSL, cable modem. that use dynamic IP addresses require a different installation process than a dedicated line that has a static IP address.

2. What is the maximum extension range of network lines?

UTP Cable that is used for the Ethernet can be extended up to 100 meters without bridging. However existing UTP Cable can be extended up to 240 meters without bridging.

3. Does Network IP Camera need a special rack or case for outdoor use?

Originally, Network IP Camera itself can't be weatherproofed. Therefore, it has to be equipped with weatherproof case if Network IP Camera is used for outdoor, like existing CCTV or something.

4. If Network IP Camera consists of only permanent IP address and several private IP addresses, can Network IP Camera be connected to the network with a private IP address?

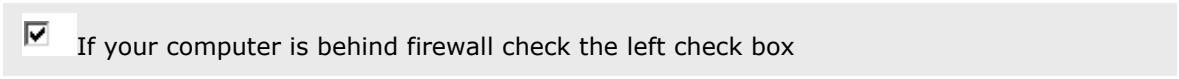
Network IP Camera can be assigned a private IP address on a network with a permanent IP address. If the network is a Class C network (255.255.255.XXX), then Network IP Camera may be assigned any available number in the last "room" (represented by XXX). However, since Network IP Camera is a web server, it can be designated as a local server. Any device on a LAN can be designed as the local server through the router. Designating Network IP Camera as the local server will make it easier for people outside the LAN to view real-time images form Network IP Camera.

5. If the network consists of only private IP address, can Network IP Camera be connected at the network?

Network IP Camera can be connected to LAN having only private IP addresses, but only people on the local network can access Network IP Camera. Networks with narrow bandwidth may not be able to support several Network IP Cameras connected simultaneously.

6. If a firewall is on the network, how it works?

If a firewall is on your network, please check here " If your computer is behind firewall check The left check box" at the login page.



7. How can a user see the images sent from Network IP Camera using Internet Explorer?

If a user wants to see the real-time images of Network IP Camera using Internet Explorer browser, install Network IP Camera Active-X control. The Active-X control is used in the live image viewer. When you access login page in Network IP Camera Homepage, The Active-X Control is downloaded automatically.

8. I can't automatically download Active-X Control for Network IP Camera?

Active-X control is be downloaded and installed automatically. However, situations occasionally arise which prohibit this from happening. If the Internet Explorer is an earlier version than v4.0 or the registry information of the system is corrupted, the automatic download and installation may fail. If problems occur with automatic download, please try a manual download.

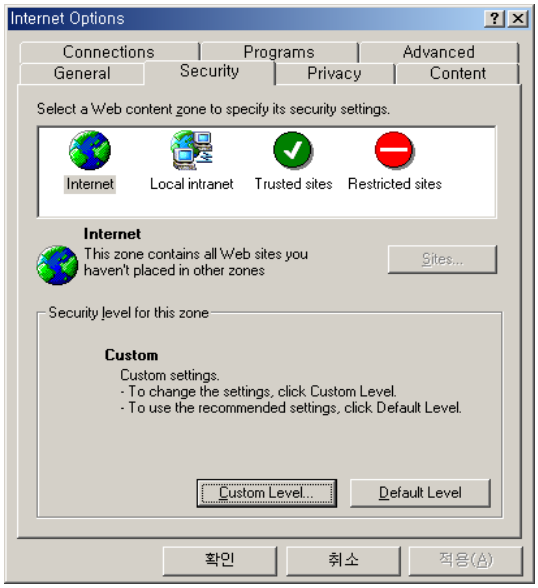
You may see the option in login page for Network IP Camera.

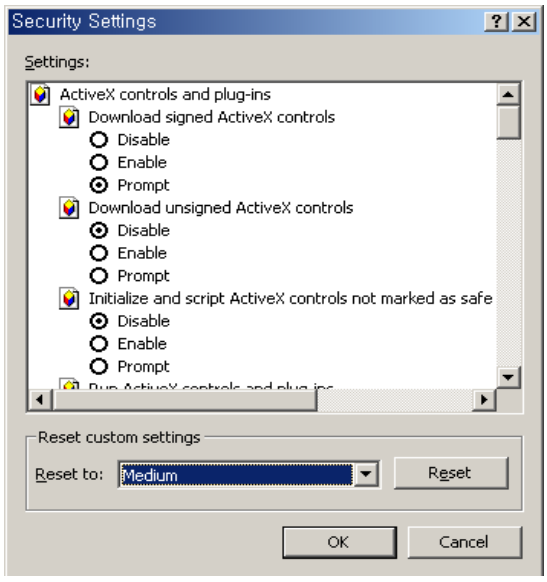
> **Note**: If you have any problem when you install ActiveX, click here to download and install ActiveX manually

Just click "here" button, then pop-up appears. You may choose "modify" or " reinstall".

9. Even though I enter right ID and Password to login, some error message "You must login first" appears. What's wrong?

Check security setting for Internet Explorer. Go to "Internet Option" and then check "Security" (If it's set "High", Active-X would have problem downloading)





C. Trouble Shooting

This appendix provides useful information to help you to resolve any difficulty you might have with your Network IP Camera. Fault symptoms, possible causes and remedial actions are provided within a quick reference table.

PINGing your IP Address

By sending a packet to the specified address and waiting for a reply, the PING (Packet Internet Groper) can determine whether a specific IP address is accessible; it also provides a particularly useful method for confirming addressing conflicts with your Network IP Camera on the network.

Having disconnected your Network IP Camera, follow the instructions below in association with Symptoms, Possible Cause and Remedial Actions, on next page, and run the PING utility to troubleshoot TCP/IP problems on your network.

1. Start a DOS window
2. Type ping x.x.x.x, where is the IP address of Network IP Camera
3. The subsequent replies will provide an explanation as to the case as to the cause of the problem. Replies can be interpreted as defined in the table below:

PING Reply	Interpretation and recommendation
bytes = 32 time = 2 ms	The IP address is already used and cannot be used again. Your must obtain a new IP address
Destination host unreachable	Network IP Camera is not accessible within your subnet. You must obtain a new IP address
Request timed out	This IP address is not used by anyone and is available for use with your Network IP Camera

Symptoms, Possible Causes and Remedial Actions

Symptoms	Possible causes	Remedial actions
Network IP Camera cannot be accessed from a Web browser	The IP address is already used by another devices	1.Disconnect your Network IP Camera from the network 2. Run the PING utility (as described in PINGing your IP Address below) and follow

The Power LED is not constantly lit	The IP address is located within a different subnet	Run the PING utility (as described in PINGing Your IP Address, on page 39), If the utility returns "no response" or similar, the diagnosis is probably correct – you should then proceed as follows In Windows 95/98 or Windows NT, check the IP address for your Network IP Camera is within the same subnet as your workstation: 1.Click "Start", "Settings", "Control Panel" and "Network". 2.Specify the TCP/IP adapter and click on "Properties". In Properties, Click "IP Address". 3.Check that the first 3 numbers within the IP address of your Network IP Camera matches the first 3 of your workstation. If not, your Network IP Camera may be on a different subnet and the IP address cannot be set from this workstation. You must set the IP address for Network IP Camera from a workstation on the same subnet.
	Other networking problems	Trying replacing your network cable Test the network interface of the product by connecting a local computer to the unit, using a standard Crossover (hub-to-hub) Cable. If the above actions do not resolve the problem, Network IP Camera maybe faulty, In this case, try to localize the problem by connecting Network IP Camera to the serial port of a local computer, using the supported RS232 Cable
	Faulty power supply	Verify that you are using an provided power supply
The network LED is off	Faulty cabling	1.To verify that the cables are functional, PING the address of a known existing unit on your network. 2.If the cabling is OK and your network is reachable, your should receive the reply similar to this: . . . bytes = 32 time = 2 ms,
The operating status LED	Faulty connecting	Verify that the power is well connected
Your Network IP Camera works locally, but not externally.	Firewall protection Default routers required The internet site is too heavily loaded	Check the internet firewall with your system manager Check if you need to configure the default router settings Configure Network IP Camera to upload your video images to an FTP server or an ISP

A series broad vertical white line appears across the image.	The CMOS sensor becomes overloaded when the light is too bright. This can happen e.g. with sun light reflexes.	Direct exposure to extreme sunlight or halogen light may cause serious damage to the CMOS sensor. Reposition your Network IP Camera into a more shaded location immediately. Note: damage caused to Network IP Camera through over exposure to direct sunlight or halogen light is not covered under the product warranty.
Bad focus	Focus has not been correctly adjusted	Adjusting the camera manually till the image views clear.
Noisy images	Video images may be noisy if you are using Network IP Camera in a very low light environment	To solve this problem, you need more light. Use the back light function. If not helpful, you may wish to consider replacing the basic lens with a more sensitive lens, if the lighting conditions within the installation area can not be improved
Bad quality images	The Display Properties are incorrectly configured for your desktop	Open the Display Properties in your desktop and configure your display to show at least 65'000 colors, i.e. at least 16-bit. Note: Using only 16 or 256 colors on your computer will produce dithering artifacts in the image.
	The camera is not focused correctly	Referring to the above, adjust the camera manually

NOTE

If you still have a problem after reading this information, please contact your dealer or check the FAQ on the Intellinet web site at http://www.intellinet-network.com

D. Utilizing IP Addresses on Local Network

Introduction

What we utilize to access to the Internet are done via Internet IP addresses increasingly.

Currently, IP addresses are limited. There are 5 classes' of networks, and each network contains IP addresses. A network can only hold a limited number of IP addresses. The number of IP addresses depends on the network class. The 5 classes are labeled "A" through "E" with the most common one being the "C" class network.

IP Construction and Network Class

1) IP Construction

xxx	xxx	xxx	xxx
X1	X2	X3	X4

(xxx: 0-255)

e.g. 192.168.1.1

2) Network Class

A Class: A network that contains IP addresses from 0 to 127 at room 'X1"

Network ID: X1

Host ID: X2, X3, X4

There are 128 A-Class networks in the world.

B Class: A network that contains IP addresses from 0 to 127 at room 'X1"

Network ID: X1, X2

Host ID: X3, X4

There are 65, 534 B-Class networks in the world.

C Class: A network that contains IP addresses from 192 to 223 at room 'X1'.

Network ID: X1, X2, X3

Host ID: X4

The most common network in the world; there are 2,097,152 C-class networks in the world.

D Class: A network that contains IP addresses from 224 to 239 at room 'X1'. D-class networks are used for multicasting, and are not allowed for common use.

E Class: A network that contains IP addresses from 240 to 255 at room 'X1'. E-class network are reserved.

C Class Network

1) Features of Addresses

IP address: The three-digit number in room 'X4' is for the Host ID. The number ranged from 0 to 255. Among the numbers, 0 is used for Network ID, 1 is used for Router IP (Gateway address) and 255 are used for Broadcast address. The number from 2 to 244 are IP addresses that can be assigned to Network IP Camera, PC etc.

Network ID: Identifies a network. Generally the first number assigned is Network ID.

Gateway address: The IP address of the router for connecting Internet and local network.

Broadcast address: The IP address for broadcasting. All devices connected on local network have the same Broadcast address.

Subnet Mask: Divides a local network into two remote networks. Subnet mask shows the IP quantity in a certain network. The number that can be used as subnet mask is limited (0, 4, 8, 16, 32, 64, 128)

2) Network Configuration

(1) To use as one network

Network ID: xxx.xxx.xxx.0
Gateway Address: xxx.xxx.xxx.1
Subnet Mask: 255.255.255.0
Broadcast Address: xxx.xxx.xxx.255
IP Addresses: xxx.xxx.xxx.2 – xxx.xxx.xxx.254

(2) To use as two Sub-networks (1/2 + 1/2)

Sub-Network ID: xxx.xxx.xxx.0
Gateway Address: xxx.xxx.xxx.1
Subnet Mask: 255.255.255.128
Broadcast Address: xxx.xxx.xxx.127
IP Addresses: xxx.xxx.xxx.2 – xxx.xxx.xxx.126

Sub-Network ID: xxx.xxx.xxx.128
Gateway Address: xxx.xxx.xxx.129
Subnet Mask: 255.255.255.128
Broadcast Address: xxx.xxx.xxx.255
IP Addresses: xxx.xxx.xxx.130 – xxx.xxx.xxx.254

(3) To use as three sub-networks (1/4 + 1/4 + 1/2)

Sub-Network ID: xxx.xxx.xxx.0
Gateway Address: xxx.xxx.xxx.1
Subnet Mask: 255.255.255.192
Broadcast Address: xxx.xxx.xxx.63
IP Addresses: xxx.xxx.xxx.2 – xxx.xxx.xxx.62

Sub-Network ID: xxx.xxx.xxx.64
Gateway Address: xxx.xxx.xxx.65
Subnet Mask: 255.255.255.192
Broadcast Address: xxx.xxx.xxx.127
IP Addresses: xxx.xxx.xxx.66 – xxx.xxx.xxx.126

Sub-Network ID: xxx.xxx.xxx.128
Gateway Address: xxx.xxx.xxx.129
Subnet Mask: 255.255.255.128
Broadcast Address: xxx.xxx.xxx.225
IP Addresses: xxx.xxx.xxx.130 – xxx.xxx.xxx.256

(4) To use as four sub-networks (1/4 + 1/4 + 1/4 + 1/4)
Sub-Network ID: xxx.xxx.xxx.0
Gateway Address: xxx.xxx.xxx.1
Subnet Mask: 255.255.255.192
Broadcast Address: xxx.xxx.xxx.63
IP Addresses: xxx.xxx.xxx.2 – xxx.xxx.xxx.62

Sub-Network ID: xxx.xxx.xxx.64
Gateway Address: xxx.xxx.xxx.65
Subnet Mask: 255.255.255.192
Broadcast Address: xxx.xxx.xxx.127
IP Addresses: xxx.xxx.xxx.66 – xxx.xxx.xxx.126

Sub-Network ID: xxx.xxx.xxx.128
Gateway Address: xxx.xxx.xxx.129
Subnet Mask: 255.255.255.192
Broadcast Address: xxx.xxx.xxx.191
IP Addresses: xxx.xxx.xxx.130 – xxx.xxx.xxx.190

Sub-Network ID: xxx.xxx.xxx.192

Gateway Address: xxx.xxx.xxx.193

Subnet Mask: 255.255.255.192

Broadcast Address: xxx.xxx.xxx.255

IP Addresses: xxx.xxx.xxx.194 – xxx.xxx.xxx.254

E. Updating Network IP Camera's newly upgraded Program

Caution

This process is to update the current firmware that is already installed into your Network IP Camera with a newly updated Firmware.

If you are to begin the process, follow the instruction as manual. And during the process, do not give physical shock nor disconnect network and power. Otherwise, your Network IP Camera can be damaged seriously, which may result inappropriate operation or operation failure.

If you failed to update Firmware or Network IP Camera does not operate properly after updating process, please contact your dealer nearby in your area.

Download a newly updated firmware and upgrade S/W

You can download the newly upgraded Firmware and software through the Internet at the web site (http://www.intellinet-netwok.com/)

Identify the version of Firmware

You can identify the version of Network IP Camera's Firmware on System Configuration Page. (But, the version of firmware is required 0030078 or higher)
(You may check the version of your Network IP Camera firmware first and then try to update)

To check the present version of Firmware, follow the below step.

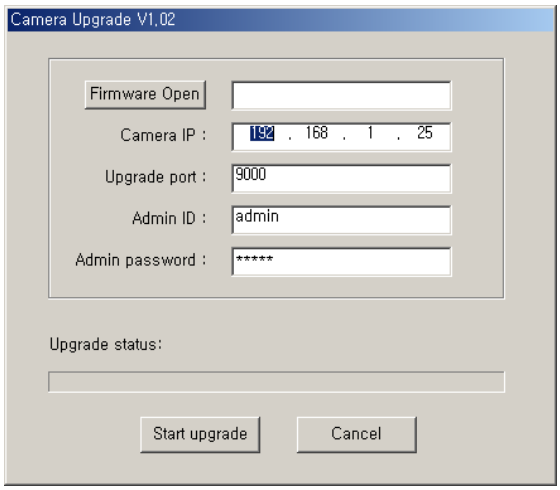
① Connect to your Network IP Camera's homepage.
② Click "Administrator Tools".
③ Move to System Configuration Page and then you can check the version of Firmware.

Upgrading the newly Network IP Camera's firmware

This updated firmware can be upgraded in Local Area Network as well as remote site.
Follow the below step for upgrading your camera.

① Confirm that Network IP Camera can be connected to your PC.
(As long as you can access Network IP Camera's Homepage, you can process upgrading)
② Execute the updated software on you PC.

③Press the "Firmware Open" button to load the newly updated firmware in the directory and then loads it.

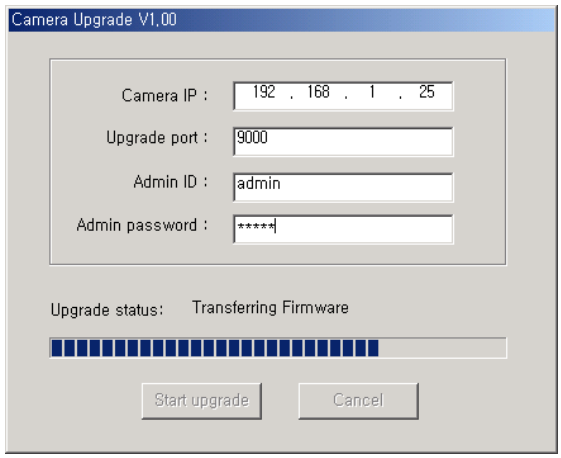


④Enter Camera's IP, Upgrade port number, Admin ID and Password configured on Network Configuration page.

And then press "start upgrade" button.

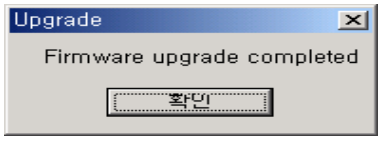
You may see the upgrading status.

Upgrading levels are divided into 4 steps from Transferring Firmware to Verifying flash memory. (Each step are indicating on progress bar)



④When completing upgrading, successful message appears.

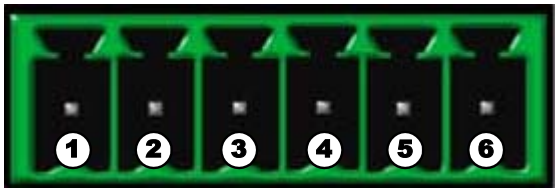
Click "OK" button.



F. The I/O Connector

Provides the physical interface to a digital output, and a single digital photo-coupled input that is used for connecting a variety of external alarm devices to Network IP Camera; including, IR-sensors, switches and alarm relay.

In combination with the configurable alarm facilities, you can quickly develop a variety of security applications that are triggered on time – or alarm based – events. The connector can also be utilized as an alternative connection point for DC supply to the unit.



NO	Function	Description
1	Power GND (-)	Power for the external input/output devices (-)
2	Power DC12V (+)	Power for the external input/output devices (+)
3	Digital Out (+)	Output to the external output devices (+)
4	Digital Out GND (-)	Output to the external output devices (-)
5	Digital In (+)	Input for the external input devices (+)
6	Digital In GND (-)	Input for the external input devices (-)

1-2 PIN

To supply external devices with power. PIN1 is connected to GND terminal of device's power and PIN2 is connected to (+) terminal. However, the external device should be less DC 12V as a voltage and 200mA as an electric current.

3-4 PIN

PIN3 is connected to (+) terminal of external output device; PIN4 is connected to GND terminal of it. Network IP Camera makes external output device operating by sending signal to external output device. However, the external device should be less DC 12V as a voltage and 200mA as an electric current.

5-6 PIN

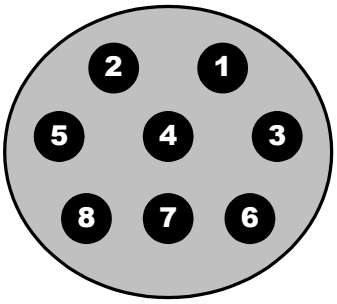
PIN5, 6 are connected to the signal output terminal of external input device such as infrared sensor or alarm sensor. (This signal output terminal should be "Normally Open" type.)

G. RS 232 CABLE

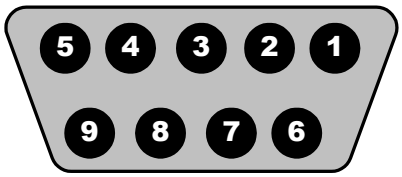
The Serial Connector

In absence of a local network connection, the RS232 serial connector provides a physical interface for connecting a PTZ devices or computer to Network IP Camera. This means that Network IP Camera can operate as a standard unit -independent of any computer network.

Users can connect to Network IP Camera by external mode.



DIN 8 PIN MALE



DSUB 9 PIN FEMALE

DIN8P MALE TO DSUB9P FEMALE		
PIN NAME	**DIN 8 PIN MALE**	**DSUB 9 PIN FEMALE**
RTS	1	8
CTS	2	7
TXD	3	2
GND	4	5
RXD	5	3
DTR	6	6
DCD	7	4
RI	8	9
NC		1

PIN Function

RTS : Return to send

TXD : Transmit Data

RXD : Receive Data

DTR : Data Terminal Ready

CD : (Carrier Detect)

CTS : Clear to send

GND : Ground

DSR : Data Signal Ready

RI : (Ring LED)

H. High Speed Solutions

This page is to help you to access to high-speed Internet services: such as xDSL or a cable modem connection. However, a most high-speed Internet Services provide you with some external IP address, there are several practical issues that should be considered when developing your application.

AVAILABLE IP ADDRESS

ISP (Internet Service Provider) will provide you with several external static IP addresses ideally –in which case you can assign any one of these to your Network IP Camera to make it fully accessible over the Internet. However, if your service provider supplies you with only one IP number – which is often the case – this IP number is normally assigned to your PC-leaving no connection available for your Network IP Camera.

What can you do if your ISP is unable to provide you with an IP number?
There are a number of other options what you may like to consider: including:

NAT BOX

Short for Network Address Translation, NAT (Network Address Translation) is Internet standard that allows a local-area network (LAN) to use one set of IP addresses for internal traffic and a second set of addresses for external traffic. A NAT box located where your LAN meets the Internet will handle all of the necessary IP address translations and provides:

- Internal IP addresses that are unique to your network – with no possibility of conflict with IP Addresses used by other companies and organizations.
- The possibility of combining multiple ISDN connections into a single Internet connection.
- An effective firewall for hiding internal IP addresses

NAT Feature in Windows 2000

Utilize the NAT feature in Windows 2000 to allow multiple Ethernet cards in your PC, and you can then use one of port for the Internet and the other for your internal network. With this solution, you can let your Network IP Camera upload image streams to an external Web Server that is maintained and located with your ISP.

ROUTERS AND FIREWALLS

Another solution is to use one of several small routers/firewalls currently available on the market. These provide the necessary NAT functionality and allow complete independence for your PC, which can be switched off or rebooted without affecting the image transmission from your Network IP Camera.

WINGATE SERVER SOFTWARE:

Running on a single Windows 95/98/2000 or NT computer, this software allows multiple users simultaneous access to the Internet through a LAN or higher-speed line, such as xDSL or cable modem connection; and effectively shares a single Internet connection with almost any type of client computer running TCP/IP.

For more advanced users, the WinGate 3.0 Standard and Pro versions also allow the administrator to change the IP bindings so that external requests may be routed specifically to your Network IP Camera – running behind the WinGate software.

NOTE

NAT, or Network Address Translator, Virtual LAN) A hardware device currently being developed and used to extend the Internet addresses already in use. NAT has been suggested as an alternative to adopting IPv6 (IPng). It allows duplicate IP addresses to be used within a corporation and unique addresses outside. It is defined in RFC 1631.

I. Reinstating the Factory Default Settings

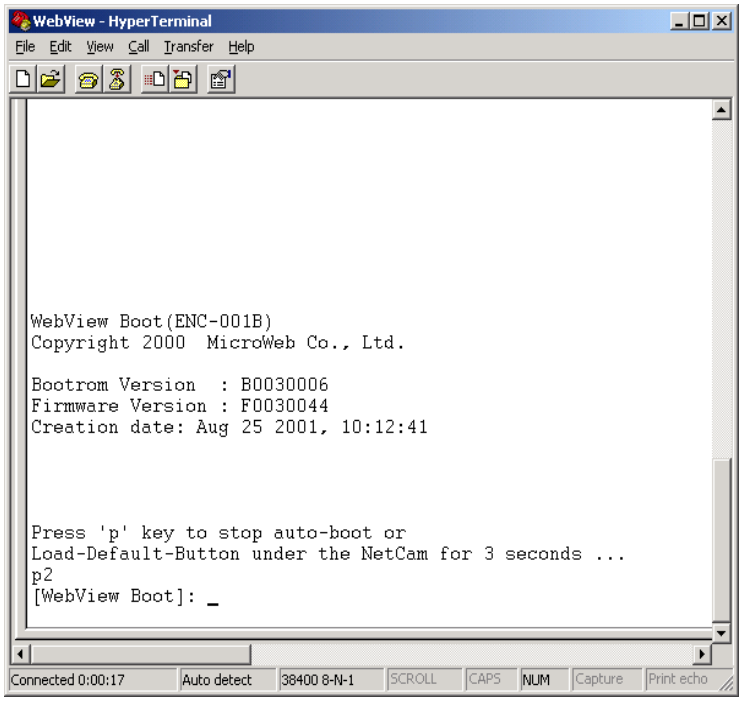
This page explains instructions in detail on how to set the default settings in Network IP Camera. In certain circumstances it may become necessary to restart or reinstate the Factory Default settings for your Network IP Camera: This is performed by pressing the Reset Button, or using Hyper Terminal Setting. Follow the instructions below to reinstate the product factory default settings

By pressing Reset button.

① Prepare clip or any sharp pin to press the reset button on the backside of Network IP Camera.
② Switch off the Network IP Camera by disconnecting the power cable.
③ Press and keep the Reset Button pressed, and then reconnect the power supply cable.
④ Keep the Reset Button pressed until the Operating Status LED (Green) blinks three times. (Note that this may take up to 10~15 seconds), then release the button. When the Operating Status LED (Green) blinks three times.

By Using Hyper Terminal

① Execute "Hyper Terminal" as referred to Chapter "4.3.1 Configuring Hyper Terminal"
② Supply the power to the Network IP Camera.
③ After a while, the count down starts with the message "**Press 'p' key to stop auto-boot or Load-Default-Button under the NetCam for 3 seconds...**" .At this time, press 'p' key. Then, [Network IP Camera Boot] prompt shows like the right side image.



④ When you enter 'w', Administrator ID & Password reinstate as factory default 'admin'

NOTE

Reinstating the original default settings will cause all parameters (Including IP address) to be reset.

Factory default setting

Administrator ID: admin
Administrator Password: admin
Guest ID: guest
Guest Password: guest
IP Address: 192.168.1.221
Subnet Mask Address: 255.255.255.0
Gateway Address: 192.168.1.1
Server IP Address: 192.168.1.200
Compression Rate: Level 1
Image Size: QVGA

J. Glossary of Terms

ActiveX – A control (or set of rules) used by a browser. ActiveX controls are often downloaded and installed automatically as required.

ARP – Address Resolution Protocol. A method for finding a host's Ethernet address from its Internet address. The sender broadcasts an ARP packet containing the Internet address of another host and waits for it (or some other host) to send back its Ethernet address. Each host maintains a cache of address translations to reduce delay and loading. ARP allows the Internet address to be independent of the Ethernet address but it only works if all hosts support it. The ARP command can be used to set the IP – addresses for your product.

CGI – A standard for running external programs from a World-Wide Web HTTP server. CGI specifies how to pass arguments to the executing program as part of the HTTP request. It also defines a set of environment variables. Commonly, the program will generate some HTML which will be passed back to the browser but it can also request URL redirection. A set of rules (or a program) that allows a Web Server to communications with other programs.

DSL – Digital Subscriber Loop, A family of digital telecommunications protocols designed to allow high speed data communication over the existing copper telephone lines between end-users and telephone companies.

DHCP - A protocol that provides a means to dynamically allocate IP addresses to computers on a local area network. The system administrator assigns a range of IP addresses to DHCP and each client computer on the LAN has its TCP/IP software configured to request an IP address from the DHCP server. The request and grant process uses a lease concept with a controllable time period.

Ethernet –A widely used networking standard.

Firewall –A virtual barrier between a LAN (Local Area Network) and other networks, e.g. the Internet.

Frame Grabber Card – Plug-in hardware for "grabbing" images.

FTP - A client-server protocol that allows a user on one computer to transfer files to and from another computer over a TCP/IP network. Also the client program the user executes to transfer files. It is defined in STD 9, RFC 959.

HTML - A markup language used to structure text and multimedia documents and to set up hypertext links between documents, used extensively on the World Wide Web.

HTTP - A protocol used to request and transmit files, especially WebPages and WebPages components, over the Internet or other computer network.
Intranet - A privately maintained computer network that can be accessed only by authorized persons, especially members or employees of the organization that owns it.

IP – Internet Protocol. The network layer for the TCP/IP protocol suite widely used on Ethernet networks, defined in STD 5, RFC 791. IP is a connectionless, best-effort packet switching protocol. It provides packet routing, fragmentation and re-assembly through the data link layer.

IP number (address) – A unique number used by a computer on the network to allow it to be identified and found.

JPEG – A standard image format, used widely for photographs. Also known as JPG.

LAN – Local Area Network. A data communications network which is geographically limited (typically to a 1 km radius) allowing easy interconnection of terminals, microprocessors and computers within adjacent buildings. Ethernet and FDDI are examples of standard LANs.

PING - A protocol that sends a message to another computer and waits for acknowledgment, often used to check if another computer on a network is reachable.

PPP – Point–to–Point Protocol. A method allowing one computer to connect to another, usually via a modem over a phone line.

Protocol - A set of formal rules describing how to transmit data, especially across a network. Low-level protocols define the electrical and physical standards to be observed, bit- and byte-ordering and the transmission and error detection and correction of the bit stream. High-level protocols deal with the data formatting, including the syntax of messages, the terminal to computer dialogue, character sets, sequencing of messages etc.

SMTP – Simple Mail Transfer Protocol

TCP/IP - Transmission Control Protocol/Internet Protocol. The wide-area-networking protocol that makes the Internet work. TCP/IP is used on many networks, including the Internet. TCP keeps track of the individual packets of information and IP contains the rules for how the packets are actually sent and received.

URL – Uniform Resource Locator. An "address" on the network.

WAN – Wide–Area–Network. A communications network that uses such devices as telephone lines, satellite dishes, or radio waves to span a larger geographic area than can be covered by a LAN.

Wizard – A program designed specifically to guide the user through a procedure. Typically used for installation and configuration. Installshield Wizard is required to download ActiveX manually.